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Digital Music for PC and Mac

Power Guide: iPod and iTunes



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iTunes Encoding Strategies

Building a digital music library used to be a simple matter of inserting a CD into your Mac and encoding the songs as MP3 files. Today the process is a little more complicated. iTunes 4.5 not only supports the popular MP3 format but also gives you the option of encoding files in the AAC (Advanced Audio Coding) format or in a new format called Apple Lossless. So which one should you use?

Each format offers a different compromise between file size, sound quality, and compatibility. The key to picking the right format for your digital music library is to find the compromise that best suits the way you listen to music. Here's a look at the current encoding options built into iTunes 4.5 and the situations that call for each one. I'll also examine options for converting songs from one format to another.



If Size Matters

As your music library grows, the amount of disk space it requires may become an issue. When you want to use disk space efficiently and fit as much as possible on your iPod, your best bet is to use one of the two *lossy* audio formats: MP3 and AAC.

An MP3 or an AAC file isn't a bit-for-bit duplicate of a digital recording; instead, it's a very accurate approximation. When you rip a CD into one of these formats, iTunes analyzes the recording and discards portions of it that most of us can't hear anyway. This deliberate lessening of quality makes MP3 and AAC files roughly one-tenth the size of the original tracks on a CD (see "iTunes 4.5 Encoding Options").

Of the two formats, AAC is more efficient—it allows you to encode at a lower bit rate and still get excellent sound. For example, an AAC file encoded at 128 Kbps generally sounds as good as an MP3 file

encoded at 160 Kbps, but the AAC file uses less disk space (AAC and MP3 use different criteria when deciding what information to discard).

By default, iTunes encodes AAC files at 128 Kbps and MP3s at 160 Kbps. However, you can specify a different bit rate by opening iTunes' Importing preference pane and selecting Custom from the Setting menu. For example, some users prefer the sound of AAC files encoded at 160 or 192 Kbps.

If Sound Matters

To my ears, MP3 and AAC files sound great. But golden-eared audiophiles cringe at the notion of compromised sound quality. For these users, Apple created the new Apple Lossless encoder.

True to its name, Apple Lossless doesn't discard any audio information when encoding. As a result, Apple Lossless files sound truer to the originals, but they don't use disk space as efficiently as MP3 or AAC files. Apple Lossless files are roughly half the size of the originals—several times larger than their MP3 or AAC equivalents. This may be a problem if you're trying to shoehorn a large music library into an iPod mini.

In fact, even if you have only a small music library, Apple Lossless files may not be a good option for listening to music on your iPod. The large files cause the iPod's hard drive to spin up more often, requiring more-frequent battery charges.

With drawbacks like these, why use Apple Lossless? One reason is sound quality: if you have good hearing and good audio equipment, you *will* be able to tell the difference. High frequencies have more sparkle while bass lines sound less muddy.

Another reason to use Apple Lossless is to hedge against format obsolescence. If you ripped hundreds of CDs into MP3 files a few years ago, you're stuck with relatively low-quality files unless you rerip the CDs (see "Rebuild Your Library"). By using Apple Lossless, you can build a digital music library that won't make you cringe as your listening skills and equipment improve. Indeed, this is the reason some serious audio buffs use the AIFF or WAV format to encode their CDs—these uncompressed formats don't affect sound

iTUNES 4.5 ENCODING OPTIONS

| ENCODER | FILE SIZE FOR A 5-MINUTE SONG ^A | PROS | CONS |
|----------------|--|--|---|
| AAC (128 Kbps) | 4.8MB | Best balance between sound quality and file size. | Not compatible with third-party music players. |
| Apple Lossless | 34MB | No loss in audio quality. | Not compatible with older iPods or third-party players. |
| MP3 (160 Kbps) | 6MB | Broadly compatible with non-Apple portable players and computer systems. | Sound quality is not as good as with AAC. |
| WAV and AIFF | 52MB | Creates uncompressed files with no data loss. | Creates very large files. |

^AFile sizes may vary from song to song.

quality. Unfortunately, they also gobble up about 10MB of disk space for every minute of music—not exactly ideal for storing thousands of songs.

If Compatibility Matters

Having great sound is important, but it won't do you much good if you can't *play* your music. Newer encoding schemes such as AAC and Apple Lossless don't have the wide support that the MP3 format has. So they may limit you in terms of what you can do with your music outside of iTunes and the iPod.

Every iPod can play MP3 and AAC files (older iPods need a software update for AAC; see www.apple.com/ipod/download). But Apple Lossless works only on iPods with a dock connector. If you use a non-Apple MP3 player (see *Reviews*, June 2004), you're even more limited: they don't support AAC or Apple Lossless.

Likewise, many newer car and home stereo systems can play CDs containing MP3 files, making this a great way to store long music mixes for a road trip or a party. But if you burn a playlist as an MP3 CD, iTunes skips over AAC and Apple Lossless tracks.

Conversion Strategies

You can detour around some of these compatibility barriers by taking advantage of iTunes' ability to convert between audio formats.

Unprotected AAC to MP3 To make a copy of an AAC file that you can play on a third-party MP3 player, open iTunes' Importing preference pane, and select MP3 Encoder from the Import Using drop-down menu. Because you're converting from one lossy format to another, use the Higher Quality option to minimize further loss in quality.

Next, select the tracks you want to convert and, from iTunes' Advanced menu, choose Convert Selection To MP3. iTunes creates MP3 versions of the tracks and adds them to your music library.

This process leaves your original AAC files unchanged, so you'll have two versions of each song you convert. To deal with the duplicates, corral them into a smart playlist with the criterion Kind Is MPEG Audio File (see "Find Those Files").

Protected AAC to MP3 Creating MP3s from music you've purchased at the iTunes Music Store is trickier. iTunes won't convert a purchased song—doing so would strip the song of its copy protection. To work around this limitation, burn the protected songs to an audio CD, and then rip the CD into MP3.

Conversions to Avoid Incidentally, there's no point in converting an MP3 or an AAC file into Apple Lossless format. You can't create a lossless audio file from a lossy version any more than you can re-create a complete novel from a *Reader's Digest* condensed book. Similarly, there's no reason to convert an MP3 into AAC format. MP3 has the compatibility edge, and the sonic damage that a conversion would impose wouldn't be worth the slightly better storage efficiency.

Rebuild Your Library

Ever wish you could just start over with your iTunes library and encode everything in a new format or at a higher bit rate? iTunes has some automation features that make the process of ripping your CDs a bit less tedious.

Open your iTunes Importing preference pane and select the new encoding settings; then insert the first CD you want to rip. When you click on Import, iTunes asks whether you want to replace your old versions. Choose Replace Existing to prevent iTunes from creating two copies of each song. If you replace the existing song, you won't have to rebuild any playlists or assign new ratings or equalizer presets. iTunes grabs this information from the original version of the song and applies it to the replacement.

Note that this tip won't work if you've edited a song's album, artist, or name information. So if you've done so, you should either restore the song's original information or manually delete the old MP3s before you rip the song.

Build a Master Library

If disk space isn't a major concern for you, and if you have enough patience, you can use iTunes' conversion tools to get the best of both worlds: maintaining a master music library in Apple Lossless format, and then creating lossy versions of tracks for your iPod.

Start by ripping your CDs into Apple Lossless format. When you want to move some selected tunes to your iPod or other MP3 player, set your Importing preferences to the correct format and choose Convert Selection from the Advanced menu. Put your iPod in manual-update mode to avoid also transferring the



Apple Lossless versions. Then drag the newly converted files onto the iPod icon.

You can delete the converted files after transferring them, or, if you want to keep them for future use, create a smart playlist to help keep track of them.

To Each Its Own

Although I've focused on the encoding options built into iTunes 4.5, there are plenty of other encoders on the market, such as FLAC and Ogg-Vorbis, and they have their own loyal followings (see "Digital Music Superguide," June 2004). In fact, the encoder showdown feels almost like a replay of the Betamax-versus-VHS wars of the 1980s. Thankfully, there's almost always a way to convert music from one digital format to another. □

Find Those Files To quickly locate just-converted MP3 or AAC files, create a smart playlist with the two criteria seen here (substitute the current date for the one shown).

Play Anything

Your favorite band releases a live recording on its Web site, but iTunes can't play it. Your friend sends you a link to an irreverent political spoof, but QuickTime Player can't open it. With so many Windows-centric files floating around the Internet, it's easy for Mac users to feel left out. But with the right software—most of which is just a free download away—you can play almost any file your Windows-using friends throw at you.

Audio Conundrums

iTunes 4.7 supports MP3, AAC, Apple Lossless, AIFF, and WAV files. To play other file formats, you'll need to either convert the files into something iTunes recognizes or find an alternative player. Here's what to do with some of the troublemakers you're most likely to encounter.

Windows Media Audio Microsoft is the king of proprietary formats, and Windows Media Audio (WMA) is one of the company's most popular. You can play almost all WMA files with the help of Microsoft's free Windows Media Player 9 for Mac OS X (www.macbu.com).

The player won't be able to help you with DRM-protected files, such as those purchased from Windows-oriented online music stores—a problem if you're moving to the Mac from a Windows machine. In this case, your best bet is to burn your purchased songs onto a CD from your Windows machine and then rip them on the Mac. Windows Media Player also can't play WMA 10 files, which are less common and require the newer, Windows-only version of the player.

Although Windows Media Player will let you listen to compatible WMA files, it won't let you export the files to an iTunes-friendly format. If you want to add the songs to your iTunes library, you'll need to try Patrice Bensoussan's free EasyWMA (www.carrafix.com/EasyWMA). Its simple drag-and-drop interface lets you quickly convert many WMA files to MP3 or WAV files.

For the files EasyWMA can't handle, there is a more circuitous route. Programs such as Rogue Amoeba's \$16 Audio Hijack (www.rogueamoeba.com) and Ambrosia Software's \$19 WireTap Pro (www.ambrosiasw.com) can record *any* sound played on your Mac—including songs played by Windows Media Player. Simply save the recording as an AIFF, MP3, or AAC file, and then import it into iTunes. (For more on using streaming-audio recorders, see find.macworld.com/0300.)

RealAudio Another audio format you're likely to come across on the Web is RealAudio. Like WMA

files, RealAudio files require a special player—in this case, the free RealPlayer 10 for Mac OS X (www.real.com). But like Windows Media Player, RealPlayer can't convert RealAudio files into other formats. You'll need to use one of the audio recorders mentioned in the previous section to import the songs into iTunes.

Lossless Audio With iTunes 4.5, Apple added Apple Lossless, an audio codec that compresses audio without throwing away any data. But there are plenty of other lossless formats that iTunes doesn't support—most notably, SHN (Shorten) and FLAC (Free Lossless Audio Codec). You'll likely run into these incompatible formats if you download live performances from places such as the Internet Archive (www.archive.org) and etree.org's Community Bittorrent Tracker (<http://bt.etree.org>).

To have iTunes recognize and play these lossless files, you'll first need to convert them to AIFF or WAV files using Scott Brown's free xACT (<http://etree.org>). Since the AIFF and WAV formats don't compress audio, you won't lose any sound quality in the conversion process. You can then burn the converted files to a CD, or import them into iTunes and convert them to iPod-friendly MP3, AAC, or Apple Lossless files.

If all you want to do is *listen* to these unsupported audio files, check out Subband Software's free

playlist

Want more tips on digital music?

Check out www.playlistmag.com to uncover the secrets of your iPod. We've got expert advice, breaking news, and reviews of all the latest gadgets.

Become a Convert

If you want to turn WMA files into something iTunes or the iPod can play, EasyWMA is the app for you.



MacAmp Lite X (find.macworld.com/0004). MacAmp Lite X can decode and play SHN and FLAC files, as well as numerous others, including Monkey's Audio (also known as APE) and OGG. (For more on alternative music formats, see "Digital Music Super-guide" at find.macworld.com/0290.)

Ogg Vorbis If you just need to play Ogg Vorbis files—a lossy format that some find superior to MP3 and AAC—check out the free Ogg Vorbis QuickTime Component (find.macworld.com/0292). This little application adds support for OGG files to any QuickTime-compatible program—including iTunes.

Video Foibles

If you try to open a movie in QuickTime only to be told that "the required compressor could not be found," don't give up. You may just need to download the missing codec. And if the needed codec doesn't exist for QuickTime Player, you can almost always find third-party software that will play the movie.

AVI One of the most common sources of video frustration on the Mac involves trying to watch movies with *.avi* file extensions. Part of the problem is that there's no one right solution for all AVI files. The *.avi* extension is actually just a *wrapper* for several dif-

ferent video compressors—including DivX, XviD, 3ivx, and Indeo.

To find out which video format a particular movie uses, open it in QuickTime (you can do this even if QuickTime can't actually display the video) and press 1-I. In the Movie Info window, note what is listed by the Format heading. This information will help you determine the type of codec you'll need.

The vast majority of AVI movies use DivX, a compressor that offers high video quality and small file sizes—two reasons it's so popular. To play these AVI files in QuickTime, download and install the free DivX codec from DivXNetworks (www.divx.com).

If it's not a DivX file—and if you're adventurous enough to step outside the comfy confines of QuickTime—I recommend trying either MPlayer OS X (<http://mplayerosx.sourceforge.net>) or VLC Media Player (www.videolan.org). These excellent and free multimedia players can tackle many of the video formats unknown to QuickTime. My favorite is MPlayer OS X. I've thrown nearly every type of AVI file I could find at it, with great results. It also lets you use the arrow keys to skip backward or forward during playback—a feature QuickTime doesn't offer.

MPEG-2 Although OS X's DVD Player can play DVDs without trouble, it can't play the MPEG-2

files that go into making those DVDs. This is a problem, for example, if you use Apple's Compressor software to turn your video into MPEG-2 files for burning to DVD and then need to preview those files.

To view MPEG-2 files via QuickTime, purchase the \$20 QuickTime 6 MPEG-2 Playback Component, from Apple ([find .macworld.com/0293](http://find.mactracker.com/0293)). If you don't want to spend the extra money, you can also play back most MPEG-2 files with MPlayer OS X or VLC Media Player.

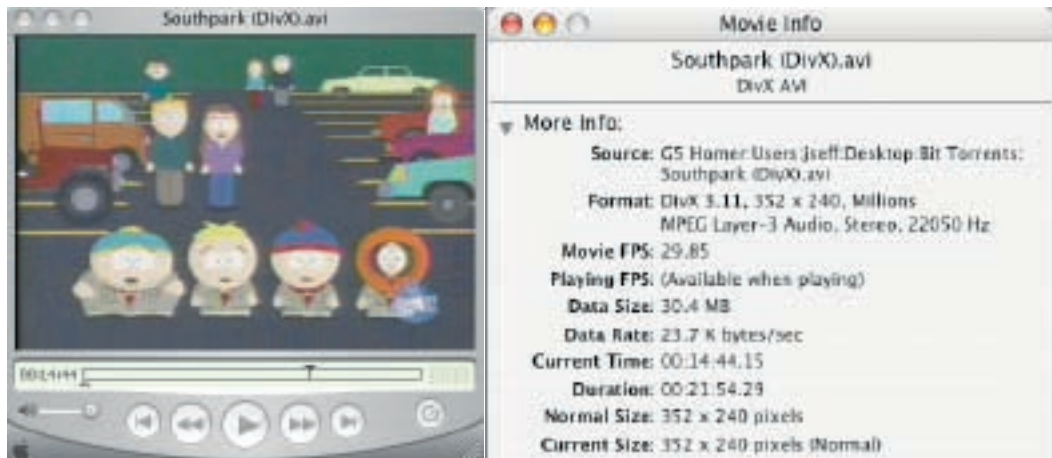
Windows Media Video and RealVideo Microsoft and Real Networks also have their own video formats. To play Windows Media Video or RealVideo, use Windows Media Player or RealPlayer, respectively. MPlayer OS X and VLC Media Player can also play some of these files, but their playback is sometimes limited to the audio track.

If you need to convert these videos to something you can edit or play in QuickTime, check out Ambrosia Software's \$69 SnapzPro X 2 (★★★★★; [find .macworld.com/0295](http://find.mactracker.com/0295)), which can capture movies and still images. Simply open the movie in any application that will play it, and then launch SnapzPro. Click on the Movie button, choose your desired settings, and then draw a box around the movie you want to record.

Know Your Options

These days, there are very few file formats your Mac isn't able to play. And thanks to the hard work of dedicated software developers, that list is getting shorter all the time. □

Senior News Editor JONATHAN SEFF has never met an audio or video file he hasn't tried to play.



QuickTime Magic

With the free DivX codec, you can play many AVI files from within QuickTime, such as this DivX file (the Movie Info window contains information about the file).

Corral Your Classical Music

If you're a fan of classical music, then you've probably, at some point, become frustrated with iTunes and the iPod. Track information from the Web is inconsistent, pieces are difficult to tag and categorize, and imported songs don't flow seamlessly into one another. But you can have your Mozart and enjoy it, too, with these simple tips.

playlist

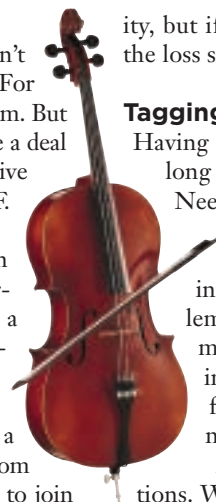
Want more tips on digital music?

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Eliminating Gaps

Most audio players—the iPod included—can't play music without gaps between the tracks. For many types of music, this isn't a major problem. But for classical music (especially opera), it can be a deal breaker. Even a short blip between a recitative and an aria is enough to ruin the effect of G. F. Handel's greatest works for the stage.

For listening in iTunes, you can turn on Crossfade Playback (in iTunes' Audio preferences) and set it to 0 seconds—that does a pretty good job of keeping the flow. But a better workaround for iTunes and iPod playback is to combine multiple tracks into one. When you're importing a CD, select a group of tracks and choose Join CD Tracks from the Advanced menu—this will cause iTunes to join those tracks into one long music file upon import. iTunes displays the tracks with a vertical bracket indicating that they're to be joined (see "Join In").



ity, but if you reimport tracks at the same bit rate, the loss should be negligible.

Tagging Classical Music

Having correct tags for your music is essential. As long as you have Connect To Internet When Needed selected in iTunes' General preferences, iTunes searches the online Gracenote CD Database for artist, album, and track information when you insert a CD. The problem is that when you're dealing with classical music, this information is often wrong or incomplete, or the tags show up in the wrong fields. To best manage your music, you'll need to do some tweaking.

Many classical CDs show up as compilations. While many classical albums may actually be compilations, where the artists listed change from one piece to another, it isn't always useful to classify them that way. So start by nuking the compilation tag. Select all the tracks on an album (either before or after importing), and then select File: Get Info. In the Multiple Song Information window, set the pop-up menu below Part Of A Compilation to No, and then click on OK.

Changing Track Names Since the database often returns incorrect track names for classical CDs, you need to change these manually. In some cases they're blank, and in others they're totally useless: for instance, you may find Symphony No. 5 listed for all the tracks of that symphony. You may even find that the track names appear in the artist tags or in other odd places. Click on a track to select it and then press enter; or select a track and use File: Get Info to access the Info tab and alter the information.

Choosing the Correct Artist One of the best ways to search for music is by artist, but the artist tag doesn't have to be the actual performer. Since iTunes lets you browse only by genre, artist, and album, it can be useful to change the artist tag to the composer's name; this way you can browse, say, all of your Schubert music by looking for his name in the Artist column. On the iPod, you can browse by composer, but if you

continues

| # | Song name | Time | Composer | Artist | Album |
|---|-----------|-------|---------------|--|------------------------|
| 1 | I | 12:43 | Gustav Venter | NDR Sinfonieorchester, Kyriil Randtschik | Mahler: Sinfonie Nr. 1 |
| 2 | II | 8:10 | Gustav Venter | NDR Sinfonieorchester, Kyriil Randtschik | Mahler: Sinfonie Nr. 1 |
| 3 | III | 8:27 | Gustav Venter | NDR Sinfonieorchester, Kyriil Randtschik | Mahler: Sinfonie Nr. 1 |
| 4 | IV | 17:46 | Gustav Venter | NDR Sinfonieorchester, Kyriil Randtschik | Mahler: Sinfonie Nr. 1 |

Join In The Join CD Tracks command helps you combine several tracks into one, so iTunes won't create those distracting small gaps between songs or play pieces out of order.

You can combine an entire CD or just parts of it. Say you want to import a symphony as one track, but the CD contains two symphonies. Select the tracks of the first and join them, and then do the same for the second—when you import the CD, each symphony will be a single, free-flowing track. The downside is that you lose the ability to listen to individual movements or arias without scrubbing through a file.

If you've purchased music from the iTunes Music Store, or if you've already ripped your CDs as individual tracks and don't want to rip them again, then you have a few options. Jack Gill's Track Splicer AppleScript (macworld.com/0470) lets you join unprotected tracks in iTunes (as long as they have the same format and bit rate). Alternatively, you can burn an audio CD from protected files and then reimport the tracks, joining the ones you want to. The second method may mean you lose some qual-

| Artist | Album |
|----------------------------|-----------------------|
| Gabriel Fauré | Sym No 1 – Bernstein |
| Georg Böhm | Sym No 1 – Inbal |
| Georg Philipp Telemann | Sym No 1 – Kondrashin |
| George Gershwin | Sym No 1 – Simonov |
| Glück, Christoph Willibald | Sym No 2 – Bernstein |
| Gustav Mahler | Sym No 2 – Inbal |
| Handel, George Frideric | Sym No 2 – Vank |
| Haydn | Sym No 3 – Bernstein |
| Heinrich Schütz | Sym No 3 – Boulez |

The Name Game By streamlining and standardizing album names, you'll have a better musical experience with iTunes and the iPod.

want to organize your library in iTunes before syncing to the iPod, it helps to have the option to list music by composer.

You may want to leave the artist's name as is: this lets you see, for example, all your recordings of Yo-Yo Ma at a glance. However, this can get a bit confusing when the name of a symphony orchestra and conductor shows up in several different ways: the New York Philharmonic, conducted by Leonard Bernstein, could appear as Leonard Bernstein and New York Philharmonic; New York Philharmonic and Leonard Bernstein; Leonard Bernstein, New York Philharmonic [and other performers]; or NY Philharmonic and Leonard Bernstein.

All these tags mean the same thing (except in the case of discs containing additional performers). Take the time to standardize them: choose the one you prefer (or create your own, such as NYP/Bernstein), and set this tag for all your recordings featuring this orchestra and conductor. Select multiple tracks, press 1-I, and change the artist tag accordingly.

Whichever solution you choose—actual performers' names or composers—pay close attention to the spelling and ordering of these names: as far as iTunes

and the iPod are concerned, Johann Sebastian Bach is not the same as J. S. Bach; or Bach, Johann S.; or Bach, J. S.

Tagging Works Another way to tag your music is to change the album name to reflect the title of an individual work. Let's say you have a CD of Charles Ives's Concord Sonata, but it also contains a handful of other songs. Select the four tracks of the sonata and then set their album name to Concord Sonata (even adding the performer's name after that, if you want). Tag the remaining songs with something different so a search turns up only the tracks you're looking for.

Longer names of works can be problematic. For example, you could name a favorite recording of Mahler's Third Symphony something like Symphony No. 3 - Bernstein to separate it from other versions you may have. But the iPod display doesn't show enough text when you browse—you'll see Symphony No. 3, but not the conductor's name. If you have a lot of symphonies, and especially if you have multiple versions of some works, you'll want to shorten their names: Sym No 3 - Bernstein, for example, is more iPod-friendly (see "The Name Game").

Getting the Genre Right All classical music is in the Classical genre, right? Well, not really. If you're a fan, you know it has plenty of subgenres that can make it easier to organize your music. For example, should you classify a piece as Symphonic, Chamber Music, Piano, Lieder, or Opera? Would you like to be able to browse your library by Recitals, Baroque Music, or Organ Music? It's a piece of cake. Just select a group of tracks, press 1-I, and type your own genre name in the Genre field. You can now browse your music more effectively both in iTunes and on the iPod.

Adding Comments The Comments field is a catchall area for any tagging information that doesn't fit elsewhere—a place to note the soloists for an opera or the recording date of a performance (rather than the CD's release date). You can also add keywords useful for creating smart playlists. Say you have a lot of string quartets; add the words *string quartet* to the Comments field, and you can create a smart playlist that looks for tracks whose comments contain those words. Do the same for organ, viola da gamba, and other instruments.

Curtain Call

With a helping hand, the iPod and iTunes can be a great medium for organizing classical music. Once you realize how to overcome their constraints and discover the best ways to import and organize your music, you'll never look back. You may use your CDs only one more time—to import them into iTunes—and then in the future turn to your iPod for all your classical music listening. □

KIRK McELHEARN is the author of several books, including *iPod & iTunes Garage* (Prentice Hall, 2004). He also reviews early and baroque music for MusicWeb (www.musicweb-international.com).

Get Small

Many audiophiles turn up their noses at the idea of listening to compressed music. But at 10MB per minute, uncompressed audio isn't typically a viable option. Even the Apple Lossless Encoder, which can reduce files to between 40 and 60 percent of their original size, still produces large files (lossless compression creates smaller files, but doesn't compromise sound quality to do so).

Unless you have a very small library of music and a very large iPod, you're going to have to accept AAC or MP3 as your musical file format. There are things you can do to make the music sound better. iTunes' default AAC bit rate is 128 Kbps. While this is appropriate for some music, it's not ideal for classical. Importing files as 160-Kbps AAC files will make a noticeable difference—these files sound very good even on high-quality stereo equipment. If you prefer MP3 (and you also have a non-iPod music player or use a music-streaming server in your house), then you should go to at least 192 Kbps—AAC files generally sound better than MP3 files at the same bit rate, so it's worth the slightly larger file size.

If your ears are truly golden, you can go with the maximum bit rate for AAC or MP3 files. I defy anyone to tell the difference between files compressed at 320 Kbps and original CDs. And at 2.3MB per minute, you can still fit more than 3.5 hours of music on the smaller iPod shuffle, and nearly 450 hours of music on a 60GB iPod photo.



Brilliant Playlists

As our iTunes libraries swell to gargantuan proportions, it can become difficult to manage the music we listen to (or would like to listen to if we could only find it). Thankfully, iTunes offers a leg up with the Smart Playlists feature, which lets you create dynamic playlists containing exactly the kind of music you want in iTunes and on your iPod. But to do their job well, smart playlists need your help.



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New Music All the Time

iTunes' Play Count feature keeps track of how many times you listen to individual tracks. If you're sick of hearing the same old stuff and want to start exploring the deeper recesses of your music library, start by creating a smart playlist that reads Play Count Is 0 (see "Explore Your Library"). Then you can limit the number of songs in the playlist or the playlist's length (in either hours and minutes or by the amount of space the playlist consumes). In the Selected By pop-up menu, you can further narrow your choices by telling the playlist to pick songs by Album, Artist, Genre, Song Name, Highest or Lowest Rating, Most or Least Often Played, or Most or Least Recently Played (although the universe may implode if you choose Play Count Is 0 and then select Most Often Played). Be sure to enable the Live Updating option, so iTunes will check to see what you've played (in iTunes or on the iPod) when you next sync your iPod. It'll then replace any listened-to songs in the playlist with tunes you've never played.

Be Exclusive

In iTunes 4.5, Apple enhanced the Smart Playlist feature in an important way. Previously, there was no easy way to keep sections of your library from appearing in a smart playlist. For example, let's say you've digitized all your old records for the sake of posterity but you don't want any of the songs on them to ever appear in a smart playlist. Sure, you could add a "vinyl" comment to each archived song and tell the smart playlist not to include any song with that com-

ment, but wouldn't it be easier if you could simply tell the smart playlist to exclude all songs within certain playlists? Well, with iTunes 4.5 and later, you can.

In this example, just place all the songs you've ripped from vinyl into a playlist called From Vinyl. Then configure a smart playlist so that it reads Playlist Is Not From Vinyl. From there, you can further narrow down your choices by including or excluding other playlists.

Shuffle Along

The Autofill feature Apple created for the iPod shuffle works more intelligently than a "how about I fill up your iPod with whatever I like" solution—but it could be smarter. For example, I like Brian Wilson's "Barnyard" as much as the next guy, but I prefer that my iPod be filled with songs that are more than seconds-long musical appetizers. Likewise, I don't want to pack my shuffle with songs contained in large WAV files (the one uncompressed format it supports), with holiday music during the summer, or with comedy routines when I'm heading to the gym.

So I built a smart playlist made up of tracks that were longer than two minutes (and shorter than eight minutes), that were not WAV files, and that were not tagged as Holiday or Spoken Word (see "Keep It Small"). By limiting the playlist to 490MB, I was able to see exactly what was going to go on the shuffle (if you leave the Limit To option disabled, Autofill will choose a subset of tracks from a potentially much larger playlist of songs). As with my other smart playlists, I left the Live Updating option enabled.

Once you've created a smart playlist you like, select the iPod shuffle in iTunes' source list and choose the new playlist from the Autofill From pop-up menu. To refresh the contents of the smart playlist, just select everything in it and press the delete key. Because Live Updating is switched on, the smart playlist will automatically repopulate with music.

View Your Purchased Music

Although the Purchased Music playlist that iTunes creates the first time you buy something from the

continues

Explore Your Library

Probe the depths of your iTunes library by accessing tracks you've never listened to.





CHECK IT OUT

iPod Protection

Having recently lost my 60GB iPod photo, I looked into a few things I should have done. So do as I say—and not as I did—by following these iPod-protection tips:

Mark It Apple offers free engraving on new iPod and iPod photo models—take advantage of it. It's tough to pretend that an iPod reading "I Belong to Bubba. Hands Off!" is the property of anyone but Bubba. If you already have an iPod, a local jeweler will be happy to scrawl some identifying sentiment on the back.

Track It Inspice's SmartProtect (www.inspice.com) can assist in the recovery of stolen personal electronic devices. You protect your items by registering your gear's serial numbers with the service (at no cost). Anyone—the police or a potential buyer, for example—can check with the service to see whether you've reported it stolen.

Cloak It When I travel for business, I often place data files on my iPod as a backup. To protect those files, Micromat (www.micromat.com) offers the \$40 PodLock—a utility that creates an invisible password-protected partition where you can store your data. The program won't secure your music and photo libraries, and there's nothing in it that will stop someone from reformatting the iPod, but it can help prevent thieves from accessing your private documents.

Music Store should contain all your purchased songs, it doesn't always. Reinstalling iTunes or reconfiguring your music library can confuse the playlist and make it forget that you bought those songs. However, you can create a smart playlist that never forgets. Configure the top row of pop-up menus in a new smart playlist like so: Kind Contains Protected AAC. Give it a name such as Backup Library, and click on OK. All the purchased music files in your library are now in one playlist.

The iPod Mini Playlist

Many people—especially those who own iPod minis—wish that the iPod shuffle's Autofill feature worked with other iPod models. If your iPod is set to update automatically, and if your iTunes library contains more music than your iPod can hold, iTunes will create a playlist of music to fit—but iTunes isn't discerning about what it puts in that playlist. It's just as happy to copy huge AIFF, WAV, Apple Lossless, and audiobook files to your iPod as it is to grab the tiniest MP3 and

AAC files. If you want to pack as much music as possible onto your mini, you need something smarter.

With that in mind, create a series of Kind Does Not Contain conditions for AIFF, WAV, Apple Lossless, and QuickTime files—which take up a lot of storage space. Then, to avoid packing the mini with songs encoded at high bit rates (the higher the bit rate, the larger the file), limit your playlist to songs that weigh in at less than 192 Kbps. You'll certainly want to exclude the Audiobooks genre as well. Finally, be sure that the top of the playlist reads Match All Of The Following Conditions.

If you rate your music, consider adding a rating condition that reads My Rating Is Greater Than *number of stars*. Be sure to limit the size of this playlist with the Limit To option at the bottom of the Smart Playlist window. For a 4GB iPod mini, this option should read Limit To 3500 MB (you must use megabytes rather than gigabytes because the GB field won't accept decimals, as in 3.5GB).

Once you've created this playlist, select your mini in the Source menu and click on the iPod Preferences button. Now enable the Automatically Update Selected Playlists Only option, select the smart playlist you created for your mini, and click on OK. Now the mini will update with your playlist.

In the Mood

Unless you're the kind of person for whom the party never ends, you're going to want to listen to a far different kind of music on Sunday morning than on Saturday night. A great way to do so is to use iTunes' Comments field to create smart playlists.

As you traipse through your music collection, find songs for particular situations—mellow sounds for hungover Sunday mornings, or energetic tunes that will get your heart pumping while you exercise. Select multiple songs and choose Get Info from iTunes' File menu. In the resulting window, click on the Info tab and enter an appropriate word in the Comments field ([Exercise](#), for example).

When you're ready to compile your playlist, configure the top row of pop-up menus to read Comment Contains *whatever*, where *whatever* is the mood or situation you'd like a playlist for—Comment Contains Exercise, for instance. Because of its limited storage space, mood playlists are great for the iPod shuffle.

The Audiobooks Playlist

The fourth-generation iPods, iPod minis, and iPod photos place audiobooks in their own special playlist. If you have an earlier iPod, you can fake an audiobooks playlist. Just configure the top row of buttons to read Genre Contains Audiobook. □

Keep It Small The iPod shuffle's Autofill feature is nice, but you can do better with a smart playlist.



Contributing Editor CHRISTOPHER BREEN is the author of *Secrets of the iPod and iTunes*, fifth edition (Peachpit Press, 2005).

Start Your Own Podcast

Imagine running your own radio station—but without the hassle of transmitters, expensive hardware, or training. With Podcasting, it's that easy. Podcasting is amateur radio at its best: people from all around the world are recording their own broadcasts on topics ranging from technology to religion. Listeners subscribe to the broadcasts, which are downloaded to iTunes or to an iPod for listening on-the-go.

Podcasts let you interact with audiences in a way that blogs can't. Last December I started my own Podcast, The Wanderlust Geek (www.wanderlustgeek.com), to share my travel stories from around the world. Writing down the same stories would have taken a lot longer. And sharing my tales verbally added a level of intimacy that written words couldn't have achieved.

It's surprisingly easy to join the ranks of Podcasters. In fact, you probably already have most of what you need. Once you've recorded your broadcast, you simply put it online and distribute it to others through an online syndication technology called RSS (Really Simple Syndication). Think of RSS as a beacon that announces when new online content is available. Listeners use an RSS reader, such as Thunderstone Media's iPodderX (\$20; www.ipodderx.com), to find available podcasts and download them to iTunes (for more on how to find and listen to Podcasts, see "Are You Listening?").

Tip Place your mike at a 45 to 90 degree angle relative to your mouth. This will reduce the plosive sound that words beginning with the letter p can cause.

mance, Griffin recommends plugging the iMic into a self-powered USB hub instead of directly into a Mac.

If you have an iPod, you can use Griffin's \$40 iTalk voice recorder to record Podcasts while you're out and about. The iTalk plugs into the top of your iPod and records audio as a WAV file, which you can later download to iTunes or import into editing software. You can even go hands-free with the help of a clip-on mike such as Griffin's \$15 Lapel Mic.

Headphones You'll also want to plug a pair of headphones into your Mac so you can monitor your voice as you record. This allows you to hear your voice as others will hear it, and to detect background noise your ears might not otherwise pick up.

Software If you're recording directly to your Mac, you'll need special software to capture the audio as you speak. There's a wide range of options to choose from. If you have the iLife '05 suite, for example, you can use GarageBand 2 for these tasks. However, I've found that the simplest—and least expensive—option is HairerSoft's Amadeus II (\$30; www.hairersoft.com) for recording and the free Audacity (audacity.sourceforge.net) for editing.

Recording Your Podcast

To begin recording in Amadeus II, go to Sound: Characteristics and set Number Of Channels to Mono, Sampling Rate to 44100Hz, and Sampling Size to 16 Bit. Under the Sound menu, select Record. A new window containing a volume meter will appear (see "Hitting the Mark"). Practice reading your text at the volume you'd be using if you were recording. If you have a naturally quiet voice, you can boost the levels by moving the gain sliders, which are located underneath the volume meter. For a clear, full sound, the volume levels should occasionally peak into the red but usually remain in the green and yellow areas.

continues

What You Need

To record a Podcast, you need a few basic pieces of equipment:

Microphone Most iMacs, laptops, and eMacs have internal microphones. But I've found these mikes a bit lacking in both range and sound quality. I recommend going with an external computer mike instead. You can pick up a simple one from Radio Shack for around \$30. It's definitely worth the investment.

The latest PowerBooks and desktop Macs (excluding the Mac mini and the eMac) offer audio-in jacks, so you plug the mike right into the computer. If your Mac lacks this port, you'll need to plug the mike into a USB audio interface such as Griffin Technology's iMic (\$40; www.griffintechology.com). To get the best perfor-



Are You Listening?

If you're not quite ready to start your own Podcast, you can still get in on the craze by subscribing to other people's Podcasts. The first thing you'll need is a Podcasting client, such as iPodderX, which regularly checks various preset sites to find new content for download. Once you've launched your client, you can use its built-in directory to add new Podcasts. If iPodderX doesn't list the Podcast you're looking for, you can add it by going to Podcasts: Add A Podcast Feed. Then copy the RSS feed address (it usually ends in .xml) and paste it into the Podcast Feed URL field.

You can have iPodderX check specified feeds for new content to download. It will add the Podcasts to a new iTunes playlist. If you have your iPod configured for an automatic update, all you have to do is plug in your iPod; iPodderX will do the rest.

Here are some Podcasts to get you started:

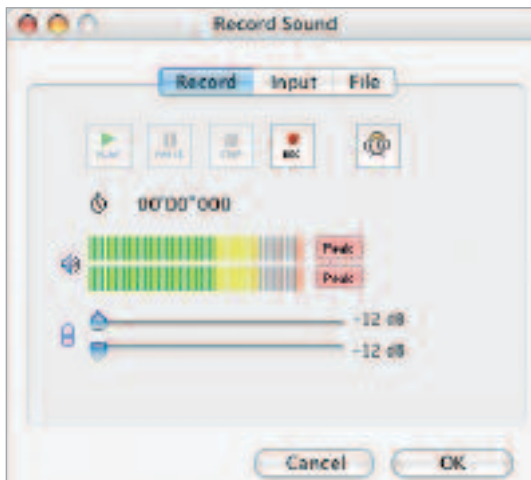
- > **Daily Source Code** (www.dailysourcecode.com)
- > **The Dawn and Drew Show** (www.dawnanddrew.com)
- > **Reel Reviews** (www.mwgblog.com)
- > **MacCast** (maccast.blogspot.com)

When you're pleased with the levels, click on the record button and start talking. If you're alone, imagine that you're speaking to someone else in the room and ignore the fact that you're being recorded. You want to make your Podcast as intimate and conversational as possible. When you're done, save the recording as an AIFF file.

Editing Your Podcast

After you've recorded your voice track, you can use Audacity to combine multiple takes (getting the best from each one), to delete awkward pauses, or to add embellishments. For editing ideas and instructions on using Audacity, go to macworld.com/0472.

To give your recording a more professional touch, consider adding a short musical intro. But remember to stick to noncommercial music that doesn't require a license from the Recording Industry Association of America. You can create your own clips with programs such as GarageBand. Sites such as FindSounds (www.findsounds.com) and Opuzz (www.opuzz.com) offer free or inexpensive royalty-free music clips for download.



Hitting the Mark Use Amadeus II's volume levels to create a rich, full sound. When you speak, the levels should barely peak into the red areas.

Once you're satisfied with your recording, export it as an AIFF file.

Uploading Your Podcast

To prepare the exported audio file for the Web, drag it into iTunes and then open that program's Importing preference pane. From the Import Using pull-down menu, choose MP3 Encoder. From the Setting menu, choose Custom. Then set the Stereo Bit Rate to 128 Kbps, the Sample Rate to 44.100 kHz, and Channels to Mono.

Return to the library and select the newly imported track. Under the Advanced menu, choose Convert Selection To MP3. Open the song information window (1-I) and fill in the Song (in this case, your Podcast entry), Artist, and Album fields. Then press 1-R to bring up the file in a new Finder window, and change the file's name to better reflect its contents—for example, samplepodcast-2005-06-01.mp3.

Once that's complete, upload the file to a Web server. Many ISPs offer free Web space for customers. If yours doesn't, you can usually pay a small fee to have someone host your audio files. Got a .Mac account? Just upload the file to your Sites folder.

To make your audio file easily accessible to others, you need to create an RSS feed for it. The easiest way to do this is to create a Weblog. Although you can use any blogging software, Blogger (www.blogger.com) is the easiest to set up.

When the blog is up and running, go to www.feedburner.com and type in your blog's address. If you use Blogger, you'll type something like this: myblog.blogspot.com.

On the next page, scroll to Additional Services, select the SmartCast option, and then click on the Hide Details link. Enable the ping audio.weblogs.com option at the bottom of the section. Now when you update your blog with new Podcasts, audio.weblogs.com will add them to its list.

Return to your Blogger page and create a new entry. You may want to add a little message with details about your Podcast, as well as any technical information, such as file size. In the entry, add a link to the audio file on your Web server. The link will look something like this:

```
<a href="http://www.example.com/example_podcast.mp3">Download my podcast here</a>
```

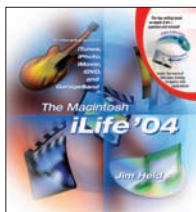
Promote Your Podcast

You can publicize your Podcast at Podcast Alley (www.podcastalley.com) and in the iPodderX directory (ipodderx.com). At Podcast Alley, click on the Add A Podcast link at the top of the page and type in the appropriate information: the title of the Podcast, the feed address, and so forth. □

CYRUS FARIVAR is a freelance technology journalist who lives in the San Francisco Bay Area. His blog is at www.cfarivar.org.

Create CD Inserts in iTunes

The iPod and iTunes are great, but sometimes you still need a CD. Maybe you want to listen to music compilations on a long car trip. Or maybe you're backing up the albums you bought from the iTunes Music Store (a good idea, by the way). The problem is, all store-bought CD-Rs look pretty much the same: *boring*.



By the Book This article is an excerpt from *The Macintosh iLife '04* by Jim Heid (2004; reprinted by permission of Pearson Education, Inc., publishing as Peachpit Press).

To give your burned CDs more panache—and to clarify what's on each one—why not print an insert that slides into the disc's jewel case? You won't even need to switch programs. Apple includes printing features in iTunes 4.6 that let you do this and more.

When printing a case insert from iTunes, you can choose from a variety of designs called themes. Some themes take advantage of the album artwork that accompanies Music Store downloads. You can even put your own artwork on a jewel-case insert with a few clicks of the mouse. CD inserts are also a great way to produce a hard-copy reference of your music library and favorite playlists.

Choose Source To switch the artwork display between the currently playing song and the currently selected song, click here.

Switch Images

A song can contain multiple images. Clicking on the little arrows displays the next or previous image associated with the song.

Add Images To display the artwork in a larger window, click here. To add a new image to the currently selected song, drag the image here. To copy the art into another program, drag it from here to the program.

View Art To see album art for a particular song, click on the Show/Hide Artwork button in the iTunes window.

Finding CD Artwork

iTunes can store album artwork—for example, an image of the CD cover—along with your music. The artwork is embedded into a music file itself, so if you move the file to another Mac, the art moves with it.

Music that you buy from the iTunes Music Store usually has artwork. To display it, click on the Show/Hide Artwork button in the lower left corner of the iTunes window (see “View Art”). From the Artwork pane, you can specify how iTunes displays images, choose between multiple images (if there's more than one), or even add new images.

But what about all the songs in your library that don't have artwork? If you'd like to add art to them, you have several options. Some free utilities will search for and retrieve artwork over the Internet; I use Fetch Art, by Yoel Inbar (find.macworld.com/0045). Like other artwork utilities, it looks up the name of an album on Amazon.com and then retrieves the artwork from Amazon's site. (For more artwork-related utilities, see www.maclife.com/itunes.)

Modify Artwork Settings

You can also view and modify a song's artwork via the Song Information dialog box. Select a song in iTunes, choose Get Info from the File menu (or press 1-I), and then click on the Artwork option.

As I mentioned, songs can contain more than one image. But keep in mind that each image increases the size of your music file, thus leaving less free space on your hard drive and iPod.

To import a new image into the list, click on Add. To delete an unwanted image, select it and click on Delete.

When creating a jewel-case insert, iTunes uses the first image listed in the Artwork Information dialog box. If you have multiple images listed there, you can rearrange their order by dragging them left and right. To use a specific image in a jewel-case insert, drag it so it's the first image in the list.

You can also print your own artwork—for example, a photo from your iPhoto library—on a jewel-case insert. First, add the image to a song. (For a photo, simply drag it from the iPhoto window to the Artwork area in the Song Information dialog box.) Drag the image



Fix iTunes and iPod Problems

Apple has created a winning combination with iTunes and the iPod—products that are both fun and easy to use. But even these well-designed feats of Apple software and hardware engineering can cause a few headaches from time to time (some of the new difficulties are due to changes wrought by Tiger). Here are some problems you're likely to encounter and how to fix them.



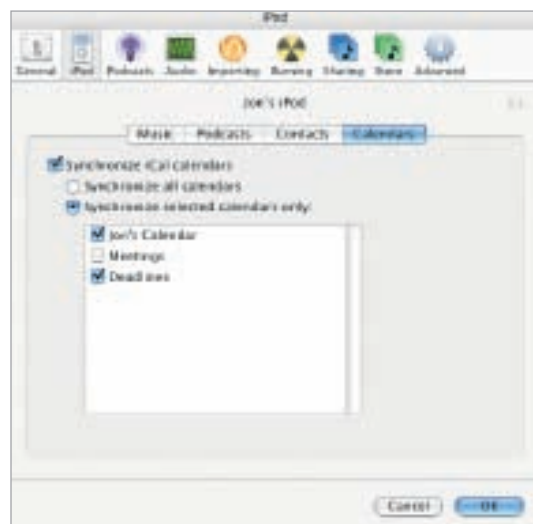
Want more tips on digital music?

For iPod- and iTunes-related expert advice and breaking news, as well as reviews of all the latest gadgets, check out playlistmag.com.

Sync Contacts and Calendars

I used to use iSync to sync my Mac's Address Book contacts and iCal calendars with my iPod. Now that I've switched to Tiger, my iPod no longer shows up in iSync.

With Tiger, Apple removed syncing for iPods (but not for PDAs and cell phones) from its iSync 2.0 synchronization application and moved that functionality into iTunes. To activate synchronization of calendars and contacts with your iPod, first go to iTunes' iPod preference pane. There you'll find both Contacts and Calendars tabs. Within each, you can choose to enable synchronization, as well as whether to sync all contacts or calendars or just selected groups or calendars (see "Savvy Scheduling"). The big benefit to moving these functions into iTunes is that the information will automatically update whenever you plug in your iPod—you no longer need to remember to launch iSync and click on the Sync Devices button.



Savvy Scheduling With iTunes taking over duties from iSync, getting your contacts and calendars onto your iPod is easier than ever.

Make Your iPod Mount

Here are some steps to take if your iPod doesn't mount, or if it doesn't appear in iTunes or the iPod Software Updater utility:

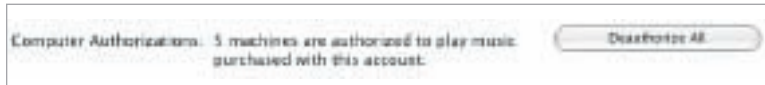
1. Make sure that the iPod is plugged directly into a FireWire port, rather than a chain of FireWire devices (the iPod requires just about all the power a FireWire port can deliver), or that it's plugged into a high-power USB 2.0 port (your Mac won't recognize the iPod if it's using a low-power USB port, such as the ones on your keyboard).
2. Your iPod may be frozen. Reset it by unplugging the iPod and holding down the menu and select (center) buttons on newer iPod and iPod mini models, or the play/pause and menu buttons on older iPods, until you see the Apple logo on the iPod's screen.
3. Restart your Mac while holding down the shift key to disable startup items. If your iPod responds well to this treatment (that is, if it mounts properly), you should use the iPod Software Updater to restore the software it shipped with (note that this will delete all the music and playlists on your iPod).
4. If the iPod still won't mount, reset it and then hold down the play and select buttons to start it up in Disk Mode (similar to the Mac's FireWire Target Disk mode), forcing it to mount. An iPod that mounts only in Disk Mode also requires software restoration.—CHRISTOPHER BREEN

Access Your Protected Music Files

After I upgraded to Tiger, songs I had purchased from the iTunes Music Store stopped syncing with my iPod and no longer played in iTunes.

For some reason, upgrading to Tiger confuses many Macs when it comes to iTunes Music Store content. I've witnessed people connecting their iPods after an upgrade to Tiger, only to find that their purchased music wouldn't sync as it had before. And the first time I launched iTunes after upgrading, I could select a purchased song in iTunes, but when I attempted to play it on the Mac, nothing happened. If you're having this problem, the solution is simple: select Deauthorize Computer from iTunes' Advanced menu, and then double-click on one of your protected purchased music files. iTunes will prompt you to enter your password, and it will then connect to a server to reestablish your ability to play and transfer those files (don't worry, iTunes

continues



Instant Reset Apple makes it easy to deauthorize all your Macs, wherever they may be, with the click of a button.

won't interpret this procedure as adding another authorized computer).

Reset Your Authorized Macs

When I try to authorize a Mac to play my purchased music, iTunes claims I've reached my limit.

If you've authorized five computers to listen to songs you've purchased from the iTunes Music Store, then you've reached Apple's limit. To listen on another computer, you'll need to deauthorize one (in iTunes, choose Advanced: Deauthorize Computer). But what if you've swapped hard drives or sold an old Mac, or what if you just don't have access to one of the computers you want to deauthorize?

Select Music Store in iTunes' Source window, and then log in to your iTunes account by clicking on your name next to the word Account in the upper right corner, entering your password, and clicking on the View Account button. If you've used up all your authorizations, you'll see a line that reads "Computer Authorizations: 5 machines are authorized to play music purchased with this account." Click on the Deauthorize All button (see "Instant Reset"), and Apple will clear its database of all Macs authorized to play songs linked to your account—including machines with dead hard drives, those you've given away, and so on (note that this button appears only when you've used up all five of your authorizations). The next time you try to listen to your purchased music on any Mac, iTunes will prompt you to enter your password and authorize that computer.

Current Hit Sick of not seeing the correct artwork for the current song? Change the album-art window's title bar to Now Playing.

Display Artwork for Current Songs

When iTunes switches to a new song, the album art doesn't change along with it.

By default, iTunes shows you the album art for the track you've selected and highlighted—that way, you



CHECK IT OUT

Cut the Cord

One major problem with traditional headphones is that they tether you to your iPod, and that connecting cord can really get in the way. Logitech (www.logitech.com) has come up with a solution: its new Wireless Headphones for iPod. You can use these \$150 headphones as far as 30 feet away from your iPod, with the aid of a Bluetooth 2.1 wireless adapter. Molded in white plastic with chrome embellishments that complement Apple's original iPod design, the Wireless Headphones are compatible with any iPod that uses a dock connector. They're equipped with 40mm full-range neodymium drivers. Controls on the headphones let you adjust volume as well as control what's playing with forward, back, and play/pause buttons. The headphones use a behind-the-head headband design and weigh 3.2 ounces (the adapter adds another ounce).

Logitech's wireless headphones rely on rechargeable batteries that last as long as 8 hours per charge and take about 2.5 hours to recharge fully. You can charge the adapter and headphones simultaneously with the included AC adapter.—PETER COHEN

don't have to play a song to see the art associated with it. If you'd prefer to see the cover for the song you're listening to at any given moment, click on the album-art window's title bar (see "Current Hit") to toggle it from Selected Song to Now Playing.

Exclude Certain Songs from Shuffle

When shuffling through the music in my library, I don't really want to hear comedy routines or my voice recordings—but iTunes doesn't differentiate between those and music.

You could create a smart playlist, but another way is to use iTunes' check boxes. iTunes picks only songs with check marks to the left of their names, so you can just deselect the songs you want excluded—they'll still play if you select them manually. If you have lots of songs to exclude, create a playlist with all the songs in it, and then select all of them and control-click on one of the tracks. iTunes will give you an Uncheck Selection option—much easier than clicking on check boxes one at a time. □

Senior News Editor JONATHAN SEFF alternates between a 40GB fourth-generation iPod and a 512MB iPod shuffle, and his iTunes library is approaching 19,000 songs.

Better Audio Burning

iTunes is a great tool for ripping, encoding, and managing your music—and it's free—but even Apple wouldn't claim that it's the be-all and end-all for creating audio CDs. iTunes just doesn't have some advanced features. With a program such as Roxio's \$100 Toast 6 Titanium, \$100 Jam 6, or \$200 Toast with Jam 6 (www.roxio.com), you can do more with your music and create a greater variety of audio discs.



Want more tips on digital music?

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Making Copies

Backing up audio CDs with iTunes is a tedious process. You need to rip them as AIFF files (by going to iTunes' Importing preference pane and changing the Import Using setting to AIFF Encoder) and then burn the resulting files back to a CD-R. And OS X's Disk Utility won't let you create an image of an audio disc. But Toast makes duplicating audio CDs easy by letting you copy an audio CD directly from one optical drive to another. If you have multiple burners, just choose the drive you want to copy from in the Read From pop-up menu (see "Burner Bonanza"), and choose the drive you want to record with in the pop-up menu that appears at the bottom of the Toast window. Then click on the Record button and watch as Toast copies your disc.

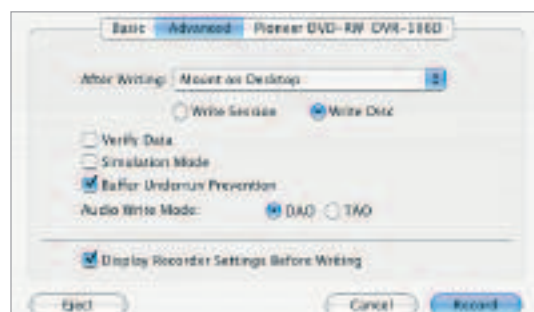
Toast also gives you the option of saving audio CDs as disk images (instead of copying them directly to blank CDs)—ideal if you have only one burner or if you plan to make multiple copies of a disc. You can also mount these images, and they'll play back in iTunes as if they were physical audio CDs.

And when burning audio CDs, iTunes creates a plain-vanilla disc. If you'd like to create an enhanced audio CD that also includes pictures and text, or if you want to fashion a disc that includes CD-Text (information, such as the album and song title, that appears in the display of compatible players), a tool such as Toast is necessary.

Mind the Gap

One of iTunes' aggravating quirks is its inability to create discs with seamlessly connected tracks. For example, the last several tracks of the Beatles' classic *Abbey Road* album flow continuously. But even

if you configure iTunes so it doesn't put a gap between the tracks when you burn them to disc (as you can in iTunes'



Once Is Best Toast's Disk-At-Once option lets you burn CDs that have seamless transitions or CDs that contain gaps of differing lengths.

Burning preference pane), you'll still hear a tiny hiccup between songs.

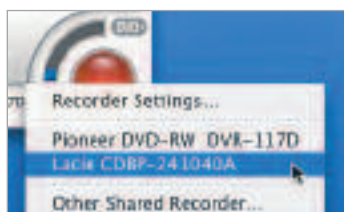
If you think you might burn audio CDs from your ripped music, consider joining multiple tracks into one at the time of import (Advanced: Join CD Tracks). However, this leaves you with long tracks that you can't navigate easily. And suppose you want no gap between tracks two and three, but a two-second gap between tracks five and six? iTunes can't help you.

Toast supports a feature called Disc-At-Once (DAO), which keeps the laser on between the tracks it's burning. DAO maintains the seamless track flow when burning a CD from uncompressed files on your Mac, copying from one CD to another, or copying from a disk image to a CD (see "Once Is Best"). It also lets you record tracks with gaps of different lengths between them (the program offers gaps from zero to eight seconds long).

Creating a seamless CD from compressed (MP3 or AAC) files in your iTunes library is a different matter, however. To create smooth transitions between iTunes tracks, you need a tool that can cross-fade one track into another (in other words, overlap portions of each track and fade the first track out while fading the second in). iTunes' cross-fade feature affects only playback in iTunes, not burning. Although Toast doesn't include a cross-fade feature, its professional

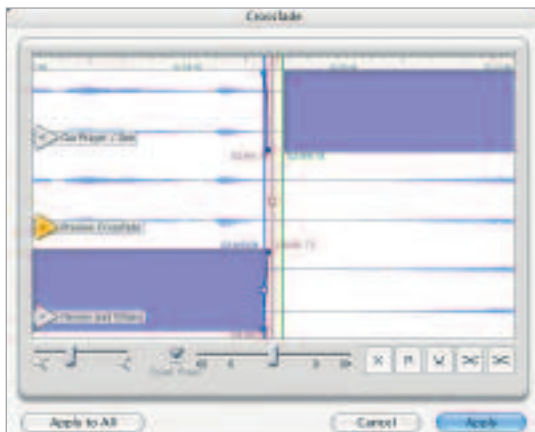
continues

Burner Bonanza You can use Toast to burn audio discs directly from one drive to another.



Make It Smooth

Jam's cross-fade tools help you smooth over gaps between tracks.



sibling, Jam, does. (Note that with Tiger and QuickTime 7, you can no longer use Toast or Jam to burn protected AAC files.)

With Jam, you can not only impose cross-fades on tracks and burn those effects to disc, but also change the cross-fade's shape and duration (see "Make It Smooth"). This allows you to create a more natural-sounding cross-fade, one that's likelier to cover up the audio hiccup that occurs between tracks. As with Toast, you can pick gaps of different lengths between tracks—although with Jam, these gaps can be of any length (perfect if you want that surprise bonus track to begin 45 seconds after you listener thinks the last track has ended).



CHECK IT OUT

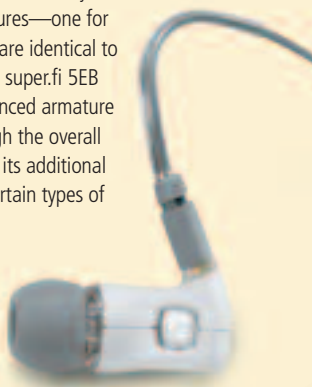
Sound Advice

For years, Ultimate Ears (www.ultimateears.com) has been offering personalized in-ear-canal headphones (or "canalphones"), which are custom-molded to perfectly fit a user's ears. However, with prices starting at \$550, the market for these products has been limited mainly to professional musicians and serious audio geeks.

Now the company has introduced the first two models of its new super.fi series of consumer canalphones. These models are universal-fit products: you choose the tips—from four rubber-tip sizes and one foam-tip size—that best fit your ears.

The \$249 super.fi 5Pro features two balanced armatures—one for high frequencies and one for low frequencies—that are identical to those found in the company's \$550 UE-5c. The \$199 super.fi 5EB (EB stands for "Extended Bass") consists of one balanced armature and a ported diaphragm for low frequencies. Although the overall sound of the 5EB isn't as refined as that of the 5Pro, its additional bass response should appeal to people who enjoy certain types of music (hip-hop, rap, and rock, for example).

Each model is available in white or black and comes with two cases, and each includes a 1/8-to-1/4-inch adapter, a 1/8-inch attenuator for use with overly loud airline headphone jacks, and a cleaning tool (hey, you're sticking these things deep in your ears—wax happens). —DAN FRAKES



Added Features

Toast and Jam (and Toast with Jam, which includes both apps and additional Toast features) perform other tricks that iTunes can't.

Support for High-Resolution Files iTunes can convert the files it supports (44.1kHz and 48kHz AIFF, WAV, MP3, AAC, and Apple Lossless files) to a format compatible with audio CDs, but it doesn't know what to do with higher-resolution audio files—files created in professional audio applications with special hardware. Toast and Jam can burn an audio file of up to 192kHz and 64 bits to a standard audio CD. The Toast with Jam package can even add Dolby Digital files to an audio CD.

DVD Audio Discs Although iTunes can back up your music as data to a DVD-R disc, you can't play these discs in regular AV equipment. Toast with Jam can create DVD Music Albums—DVDs with as much as 36 hours of two-channel, Dolby Digital-encoded music (less in PCM format). The discs include basic navigation menus and on-screen "now playing" information, and a standard DVD player will play them.

Convert and Restore LPs and Tapes You can use iTunes to rip CDs but not to record audio from a computer's audio-input port. With CD Spin Doctor (a program included with Toast and with Roxio's \$50 The Boom Box), you can record your old LPs and tapes to your Mac. The program can recognize gaps between songs and automatically segment albums into tracks for you; it can also remove pops and crackles.

Track and Album Normalizing iTunes includes the Sound Check feature, which balances the volume of tracks so they more closely match one another. This isn't always a desirable effect, because audio engineers purposely master recordings so that some tracks are quieter than others, and when you impose Sound Check, you lose the balance between soft and loud recordings on an album. Jam lets you balance (normalize) tracks either individually or in groups; you'd balance them individually to give tracks from different CDs the same volume, and you'd balance a group of tracks to increase an album's overall volume without boosting all the tracks to the same volume.

The Next Step

If you do little more than rip CDs, listen to music in iTunes and on your iPod, and compile the occasional mixed CD, iTunes is a great tool that will serve you well. In fact, Steve Jobs recently announced that iTunes 4.9 will support Podcasting, so the application is clearly growing. If you need more from your audio CDs, however, it may be time to look beyond iTunes. For Mac users, Toast and Jam are excellent choices. □

Contributing Editor CHRISTOPHER BREEN is the author of *Secrets of the iPod and iTunes*, fifth edition (Peachpit Press, 2005), and the editor in chief of Playlistmag.com.

10 AppleScripts for iTunes

AppleScripting is a powerful way to automate repetitive (and often tedious) tasks on the Mac. Once you start using a good script, you'll wonder how you ever lived without it. The good news is that you don't have to know how to write scripts in order to take advantage of them. There are tons of AppleScripts on the Web (most of them free downloads), and quite a few of them are for iTunes.

playlist

Want more tips on digital music?

For iPod- and iTunes-related expert advice and breaking news, as well as reviews of all the latest gadgets, check out playlistmag.com.

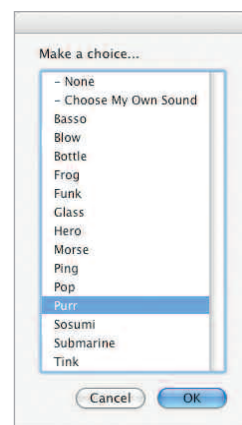
If you're an iTunes user who hasn't yet jumped on the AppleScript train, now's a great time to climb aboard. To start you off, I asked Doug Adams—who runs the Web site Doug's AppleScripts for iTunes (www.dougscripts.com/itunes)—to offer his top picks from the more than 300 scripts on his site. All the scripts listed here have been certified to work with the latest version of iTunes in Tiger (OS X 10.4). (You can download a zip archive of all the scripts described here from macworld.com/0588, or visit Doug's site to download these and other scripts.)

Once you download a script, you'll need to install it to make it work in iTunes. Quit iTunes if it's running, and drop your script in */your user folder/Library/iTunes/Scripts*. If this is your first foray into iTunes scripts, you'll need to create a Scripts folder (or just download the set and drop the resulting

Scripts folder in the right place). Then relaunch iTunes, and you'll find that you can access your scripts by clicking on the script icon in the menu bar (between the Window and Help items).

1. I Hate That iTunes Done Chime!

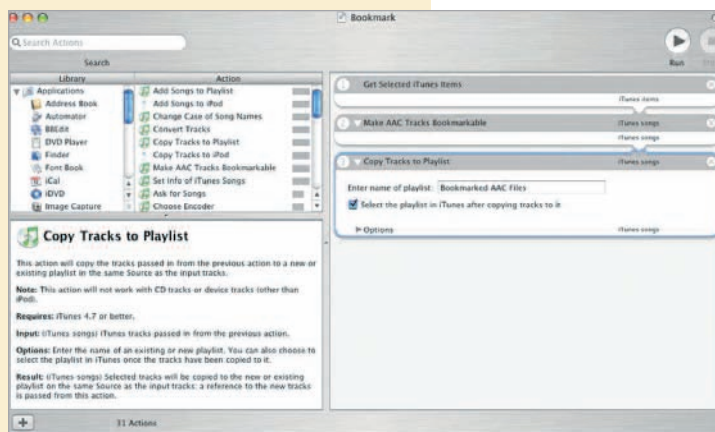
If you're sick of the standard Done chime that iTunes plays after importing files (or after running some of the import or convert scripts described later in this article), you're in luck. This applet lets you choose one of OS X's built-in sounds, select any AIFF file on your Mac, or turn off the chime altogether (see "Sound Off"). To launch it, you double-click on it instead of selecting it via the Script menu.



Sound Off Change—or disable—the chime that iTunes sounds when it finishes encoding.

Get In On the Actions

AppleScript is great, but not everyone wants to spend time learning how to write scripts. And thanks to Tiger, now you don't have to. OS X 10.4 introduces Automator—scripting for the rest of us. Unlike AppleScript, Automator allows anyone to put together a workflow by dragging and dropping a series of actions into a window, instead of having to learn complex programming commands (see "Easy Automation"). Apple includes a bunch of Automator actions for iTunes and the iPod, and Doug Adams has put together a series of seven actions—Get Selected Tracks or Selected Playlist, Choose Encoder, Restore Encoder, Convert Tracks, Copy Tracks to Playlist, Copy Tracks to iPod, and Make AAC Tracks Bookmarkable—that you can download from macworld.com/0589 and start using.



Easy Automation With Automator, you can create workflows for apps such as iTunes—no programming skills required.

2. Find Album Artwork with Google

When you buy a music track from the iTunes Music Store, the file contains embedded album art. But for any music you've ripped from your own CD collection, you'll have to add cover art yourself. This script uses a selected track's album and song title to search

(via Google's Images page) for artwork. You can then manually drag the artwork to a song or group of songs in iTunes to add it.

continues



Cover Me Easily send album art to a special album in iPhoto 5.

3. Export Artwork to iPhoto

If you'd like to keep a collection of your tracks' cover art handy, this script will export the artwork of the selected tracks or a selected playlist to a new album in iPhoto 5 called My iTunes Artwork (see "Cover Me").

4. Make Bookmarkable

Audiobooks are bookmarkable—that is, they remember where you stopped playing them; when you return, they pick up at the same spot. If you'd like similar functionality with other files, this script makes any AAC track bookmarkable by changing its file type to M4B. Bookmarking can be particularly useful for long songs, captured streams, or Podcasts (as long as they're AAC files).

5. Tracks without Artwork to Playlist

Want to add artwork to your tracks but don't know which ones are missing art? This script scans any

selected tracks, playlist, or library, and adds items that don't have artwork to a new playlist named No Art. You can then add the artwork manually (the Find Album Artwork with Google script can help here).

6. Google Lyric Search

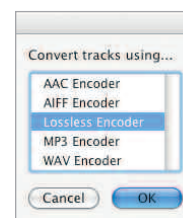
Did the Beatles really sing "A girl with colitis goes by" in "Lucy in the Sky with Diamonds"? Find out with this simple script, which searches for song lyrics by submitting the name and artist of the selected or currently playing track (along with the word *lyric*) to Google, using your default browser.

7. This Tag, That Tag Scripts

With convenient online databases, you no longer have to enter tag information by hand every time you rip a new CD. But the information you get on the Web isn't always right, and sometimes tags get switched or you want to tweak something. These four scripts help you swap and copy data between, and append and prepend data to, tags in iTunes.

8. Quick Convert

Say you have iTunes set to rip songs as AAC files, but you occasionally want to import songs as Apple Lossless files or convert a file to AIFF. This script lets you rip songs from a CD or convert tracks in your library (to a new playlist), using your choice of available encoders, without having to open the iTunes Importing pane (see "Take Your Pick"). After iTunes finishes encoding tracks, the script restores the default encoder you've set in iTunes' preferences.



Take Your Pick

Temporarily change iTunes' encoder without altering its preferences.



CHECK IT OUT

Sonic Boom

Roxio (www.roxio.com)—maker of the CD- and DVD-burning applications Toast and Popcorn—has just introduced **The Boom Box**, a collection of five previously released sound utilities to use with iTunes and the iPod. The \$50 suite includes Audio Hijack, iPodder X, iSpeak It, MusicMagic Mixer, and Roxio's own CD Spin Doctor.

Rouge Amoeba's Audio Hijack lets users grab audio from nearly any application on a Mac, including streaming audio from RealPlayer and Windows Media Player. Thunderstone Media's iPodder X is a utility that lets you browse, subscribe to, and download Podcasts (features now in iTunes 4.9, too). ZappTek's iSpeak It converts text files into spoken-word audio files that you can listen to on-the-go. Predixis's MusicMagic Mixer analyzes the sound wave of each audio file and lets you build intelligent playlists for iTunes. And CD Spin Doctor (previously included only with Roxio's Toast) lets you digitize audio from vinyl, cassette, and other analog audio sources—and it includes noise filtering and automatic track creation.—PETER COHEN



9. Rip to iPod

Don't care about keeping songs in your iTunes library—just want your music on your iPod? Then this is the script for you. Run it to rip a CD with your choice of encoder, copy the tracks to your iPod, and then delete and remove them from your iTunes library. It's the closest thing to seamless CD-to-iPod importing.

10. Import iPod Audio Files

Need to copy tracks from your iPod to your PowerBook's iTunes Library? This script adds songs to your Music folder just as if you were ripping them from CDs locally, and it will even create a new playlist for your imported songs if you want. The included ProgBar application (which also goes in the Scripts folder) shows the download status. (Note that you'll need to have your iPod in the manual-update mode to use this script.) □

JONATHAN SEFF is *Macworld's* senior news editor—and a firm believer in the power of AppleScript.

The Linux iPod

Imagine using your iPod and a regular old microphone to record studio-quality audio. Or sitting on a commuter train and playing Othello, Pong, Tetris, or Asteroids. All this and more is possible when you install Linux on your third-generation or earlier iPod. Best of all, one soft reset, and you're back in Apple's iPod operating system, listening to your tunes.

Do the Deed

To get started, you need your iPod, the FireWire cable you use to attach your iPod to your Mac, and free software from the open-source iPod Linux Project. Currently, the software supports all third-generation and earlier iPods. Work is under way on adding the fourth-generation iPod, the iPod photo, and the iPod mini to that list. (To make sure your iPod is supported, go to macworld.com/0372.) Download the iPod-Linux Installer from macworld.com/0373. It will take up about 5MB of your iPod's hard-disk space.

It's unlikely that anything bad will happen while you're installing Linux, but it would behoove you to back up your music to your Mac first (if you don't already keep your master files there). That way, if some unforeseen software glitch happens, you won't lose your entire collection.

The installation process is very straightforward. Plug your iPod in and make sure that it's mounted on your desktop. If you can't see it, open iTunes and select iTunes: Preferences: iPod. Select the Enable Disk Use option and click on OK. Now you can run the installer. Once it's completed, eject your iPod through iTunes or by dragging its icon to the Trash.

Disconnect it and then reboot it by holding down the menu and play/pause buttons simultaneously.

When you see the Apple logo, press and hold the back button. The smiling face of Tux (the emblematic penguin that is Linux's mascot) should greet you, and then you'll see a rapid series of scrolling text messages (see "Hello, Tux!"). In a few seconds, the new interface should appear. Known as *podzilla*, it looks very much like the iPod's familiar facade but includes many new options.

Enjoy the Linux Goodies

Of course, there is a simple pleasure in having Tux's mug grace your iPod when you turn it on. But that's just the beginning of the fun.

Record Audio Probably the coolest thing you can do after you install Linux on your iPod is record high-quality audio. Using Apple's software, you can create recordings only at up to 8kHz with your iPod, and to do so you must purchase and use an add-on device, such as the Griffin iTalk voice recorder (\$40; www.griffintechology.com).

A Linux-enabled third-generation iPod circumvents this restriction. You can record mono audio at up to 96kHz. (If you're feeling *really* geeky, try recording in stereo by using the line-in pins on a modified dock connector. To identify the pins you'll wire the mike to, see macworld.com/0390.)

Powered by Linux

With Linux on your third-generation iPod, you'll be able to view very simple images (left) and play many games, such as the ever mesmerizing Tetris (right).



To put those numbers into context, CDs are 44.1kHz, and Digital Audio Tape (DAT) is 48kHz. Most pro studio recording is done at 24 bits and 96kHz. Newer DVD-Audio discs also go up to 96kHz. The higher the quality you have up front, the better your recording will sound in the end.

Any simple computer microphone should work as a recording device. In fact, you can even use your left *earbud*. Mind you, the recording quality is not perfect, but it's surprisingly good. Listen to a sample at macworld.com/0374. If you're a musician, this could be a highly portable way to record your live shows.

To try this out, boot your iPod into Linux and plug in a microphone. Scroll down to the Extras directory and click on Recordings. Scroll down to Sample Rate and adjust it as you see fit. Then scroll back up to Mic Record and press the iPod's center button to begin recording. Press the play/pause button to stop or restart recording. Voilà—you'll find your recording stored as a 16-bit sample under Voice Recordings. When you connect your iPod to your Mac and soft-reset back into the iPod OS, iTunes will pick up this recording and create a playlist for it.

View Images What else can your iPod do? How about acting as a very crude photo viewer? OK, it won't turn your third-generation iPod into an iPod photo, but the supported iPods can display images (including JPEG, GIF, and BMP files) in black and white. That's good enough to sneak a quick peek at a scan of your child's latest drawing (see "Powered by Linux").

To access this feature, hook up your iPod to your Mac, and then create a new folder at the iPod's root level. Call it something like *img*. Put a small photo—say, less than 100K—in the folder. Now disconnect your iPod and boot into Linux. Using the scroll wheel, select File Browser and then the *img* folder. Press the iPod's center button to open the folder. Select the file name and wait a moment. The image will open in 2-bit gray scale. Simple photos with lots of contrast will come out better; those with subtle color distinctions will look like mud.

Play More Games This slimmed-down version of Linux, called uClinux, comes with a number of games, including Othello, Pong, Tetris (known as BlueCube), Asteroids (Steroids), and Minesweeper (Nimesweeper)—it even offers a version of Etch A Sketch called PodDraw. To play a game, use the scroll wheel to open the Extras menu. Scroll down to Games, and then select a game. Press the menu button to exit. Now when you get tired of music while traveling on a plane, train, or bus, you've got other options.

Access Other Goodies Under the Extras menu, you'll find a calculator application, perfect for doing simple math at the grocery store. There's also a Calendar application, but unlike Apple's version, it

What's Cooking

The busy programmers at the iPod Linux Project have more cool things planned. Check the status of upcoming projects at macworld.com/0375. Here's a sampling:

> iPod to iPod Connection

Status: beta

This program will enable direct transfer of files between two iPods when they're connected to each other, something that's currently impossible.

> Game Boy Emulator

Status: in progress

Play Super Mario Land on your iPod.

> Doom

Status: in progress

Doom, the classic first-person shooter, has been ported to graphing calculators, so why not to the iPod?

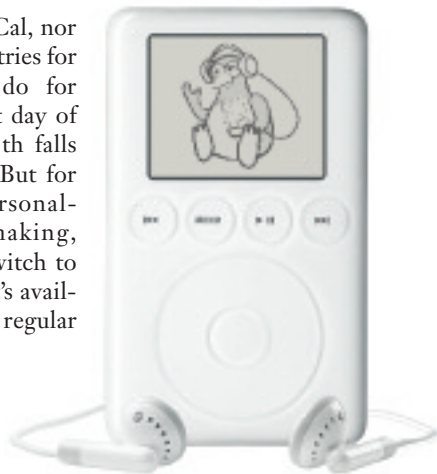
can't sync with iCal, nor does it display entries for each day. It'll do for finding out what day of the week the 15th falls on next month. But for any serious personal-appointment making, you'll want to switch to the calendar that's available through the regular iPod OS.

One iPod, Two OSes

If you try to play music with your Linux Pod, you'll quickly notice that your songs don't sound very good. In fact, they probably skip. If you try to play a song and then play Tetris while listening to it, the song stops.

In short, don't bother. A simple soft reset (press the menu button and the play/pause button) is all it takes to switch back to your regular iPod OS. Want to go back to Linux? Press those buttons again; when you see the Apple logo, press the back button, and Linux takes over.

The iPod Linux Project is open source, which means new features are always in the pipeline (see "What's Cooking"), and anyone with sufficient programming background can help. For details, go to www.ipodlinux.org. The developers also maintain a blog (www.ipodlinux.org/blog) that provides news and updates. □



Hello, Tux! When the Linux penguin greets you, you'll know you're not in an Apple OS anymore.

Now Hear This!

Are you itching to know more about Bluetooth, or to see some of the crazy ways people are *still* using the Newton? Then go to macworld.com/0573 to hear the new Geek Factor Podcast.

CYRUS FARIVAR is a freelance technology journalist living in the San Francisco Bay Area. He was an editorial intern at *Macworld* magazine in 2004.

See his blog at cfarivar.org.



Use the Menu button to return to the main text when you're done.

If you'd rather not clutter the top level of the Notes folder with hundreds of notes—and if you want to ensure that your sweetie starts in the right place—you can create subfolders within the Notes folder. To refer to files within one of these subfolders, your link must use this form: `the link text`.

For instance, if you have a file called *Our First Kiss.txt* inside a folder called *Great Dates*, you might create a *Things I'll Never Forget* link to it: ` Things I'll Never Forget`.

File names in links are not case sensitive, but you will need to spell out the full name of the note, including the *.txt* extension if it has one. And you can't link to notes stored outside the iPod's Notes folder.

Keep in mind that a folder can be a destination, so you could create a link that takes you to the *Great Dates* folder (which, presumably, contains several notes) by typing `Unforgettable Moments`.

Say It with Song

Unless you're romantically linked with someone who understands geeks and loves gadgets, the object of your affection may wonder why you've put a mash note on an iPod. It is, after all, a music player, and you'll get far more bang for your buck if links in your notes play songs or sound effects that describe your feelings.

For instance, you might add an entry to *Ooh, Baby, Baby* that reads, "When I see you, my heart sings."

To link the words *my heart sings* to the Ohio Players' "Love Rollercoaster" on the iPod, use this form: `my heart sings`.

You could just as easily link to a stored recording of yourself reading a Shakespearean sonnet or of the sound of a gentle, lapping ocean to accompany a recounting of hours spent beneath the boardwalk.

Like other links, the phrase in the note will be underlined. When you highlight the link by scrolling down the page and then press the iPod's Select button, the song or sound you've linked to will play. When it's done, the iPod returns to the note.

You can also use links to point to a particular playlist, genre, artist, composer, or album. If you wanted to link to the playlist *Funky Love Songs*, with the phrase "Select me to groove all night!" you'd create this link: `Select me to groove all night!`.

If your iPod has more than one version of a song—both the studio version and the live recording, for example—you can combine filters to zero in on a specific song. A link that reads "Select me to

Noteworthy Tools

Is your mind reeling with possibilities for the iPod's Notes feature? You are not alone. Some intrepid folks have already written utilities and AppleScripts that help push it to the limit:

- > Flying Meat Software's \$20 *VoodooPad* and free *VoodooPad Lite* (www.flyingmeat.com) let you create linked iPod-ready notes without having to enter a single line of HTML.
- > Kainjow Software's *Pod2Go* (free [donations accepted]; www.kainjow.com/pod2go) can download news feeds, weather, movie schedules, horoscopes, stock information, song lyrics, driving directions, and more onto your iPod.
- > Tom Sutcliffe's *Book2Pod* (free; www.tomsci.com/book2pod) converts long plain-text files—books from Project Gutenberg (<http://promo.net/pg/>), for example—into small linked-text files. *Book2Pod* can create files that exceed the iPod's limits of 4Kb per note and 1,000 notes per iPod.
- > Kainjow Software's *BiblePod* (free; www.biblepod.kainjow.com) allows you to read books and chapters from the King James Bible on your (Notes-capable) iPod.
- > Apple's iPod *AppleScripts* (free; www.apple.com/applescript/ipod/) can do everything from extracting a MacCentral.com article from a Safari page and making it iPod-readable to letting you copy text to the clipboard and put it in the iPod's Notes folder as multiple linked text files.
- > The *Mail2iPod* AppleScript (free; www.find.macworld.com/0022), posted on macosxhints.com, lets you read Apple Mail e-mail on your iPod.

hear how I feel!" could play the studio version of James Brown's "Prisoner of Love," from the album *Can Your Heart Stand It!!* Just use this form: `Select me to hear how I feel!`.

Locking It Down

Your present is nearly complete. But your gift will be far more effective if it launches directly to the Notes screen when your loved one first switches on the iPod.

For this to happen, you must configure the iPod to launch into *NotesOnly* mode. To do so, create a plain-text document and enter this line of text: `<meta name="NotesOnly" content="true">`.

Save the file with the name *Preferences*, and copy it to the top level of the iPod's Notes folder. When the iPod next launches, it will display the Notes screen, and it won't let you navigate outside the Notes area. You can steer to notes with the scroll wheel and the Select button, but you can't access screens other than those in the Notes area unless you hook the iPod up to your Mac and remove the *Preferences* file you placed in the Notes folder.

Duly Noted

Your multimedia masterpiece is complete. Give the iPod a final charge, wrap it in a colorful case, and present it on bended knee. Now that will strike the perfect note! □

Free Your Music

Are you constantly tethered to the headphone jack of your Mac or iPod—even when you're home alone? The problem may be that you don't have the right speakers. Whether you're lounging around the house or relaxing on a tropical beach, we'll help you cut the cord and find a set of speakers that can do justice to your favorite tunes.

2.1 Speaker Systems

If you have desk space to spare, you'll get the best sound from a 2.1 speaker system, which includes a subwoofer and two satellite speakers. These systems take up more room than all-in-one designs and are much less portable, but they also give you the full audio range of your music. Just plug them into your computer (or your iPod) and an AC jack, and then sit back and enjoy.

BUDGET BUY X-230 >>

PRICE: \$50 **CONTACT:** Logitech, www.logitech.com

WHY WE LIKE IT: For \$50, you used to get tiny beige battery-powered speakers that sounded about as good as a couple of tin cans. Today, for the same price, you can get the attractive X-230, which includes a 20-watt powered subwoofer. It can't deliver the deep bass and the overall sound quality we found in some of the more expensive setups, but with this price, we can't complain.



STYLISH SOUND << Creature II

PRICE: \$100 **CONTACT:** JBL, www.jbl.com

WHY WE LIKE IT: Although its subwoofer and tiny satellites look more like ghouls than gear, the Creature II is oddly stylish: its glossy white and chrome tones match many Apple products. But even more impressive is the sound quality—people are frequently shocked by the audio this relatively small system produces. Treble and bass controls on the subwoofer let you fine-tune the sound, and nifty touch-sensitive buttons on the right satellite let you adjust the volume.





BLOCK-ROCKIN' BEATS

▲ ProMedia GMX A-2.1

PRICE: \$150 **CONTACT:** Klipsch Audio Technologies, www.klipsch.com

WHY WE LIKE IT: If bass is your thing, you'll be hard-pressed to find a system that puts out more boom than these Klipsch speakers—especially at this price. The ProMedia GMX A-2.1's 75-watt built-in amplifier and sizable subwoofer produce some serious beats. The futuristic satellites look and sound good, and they sit on adjustable stands for optimal positioning. A handy desktop controller lets you adjust volume and bass levels, and it offers connections for two different audio sources—so you can attach your computer *and* an iPod.

BIG SOUND, SMALL PACKAGE

MegaWorks 210D >>

PRICE: \$250 **CONTACT:** Cambridge SoundWorks, www.cambridgesoundworks.com

WHY WE LIKE IT: With a 150-watt subwoofer, the MegaWorks 210D is one of the few systems with a stronger bass kick than the ProMedia GMX A-2.1. But it takes up less space. Its diminutive subwoofer provides an additional 130 watts to the satellites and includes separate bass and treble controls. By the way, the *D* stands for "digital"—so if you have a sound card with coaxial-digital output (as opposed to the optical-digital output offered by G5s), you can attach it directly to the MegaWorks 210D's digital input for superior sound.



SPLURGEWORTHY ◀◀ FX6021

PRICE: \$300 **CONTACT:** Altec Lansing, www.alteclansing.com

WHY WE LIKE IT: The FX6021 is one of the best speaker systems we've heard, and its G5-inspired design is very easy on the eyes. The multifunction controller lets you adjust volume, bass, and treble—as well as connect headphones and a second audio input without having to fiddle behind the subwoofer. You even get a wireless remote that provides the same options as the controller unit. The thin, six-driver satellites sit on weighted bases or mount flat on a wall.

continues

Surround-Sound Systems

If your computer doubles as the center of a home theater setup—or if you want to play games that offer full surround-sound effects—you may want to consider a multi-channel system. These systems use five satellite speakers (for front, center, and rear audio) along with a subwoofer. The result is a blissful envelope of directional audio.

To use these systems, you need a Mac that provides multichannel audio output—via an optical- or coaxial-digital jack. All G5s offer optical-digital output. You can add multichannel output to a Power Mac G4 by installing a third-party PCI sound card, such as the \$100 M-Audio Revolution 5.1 (★★★★; *The Game Room*, January 2005). Here are a couple of our favorites.

BUDGET BUY

ProMedia GMX D-5.1

PRICE: \$150 **CONTACT:** Klipsch Audio Technologies, www.klipsch.com

WHY WE LIKE IT: The GMX D-5.1 offers the same futuristic satellites and great bass as the GMX A-2.1, but adds a 100-watt amplifier, center- and rear-channel speakers, and support for Dolby Digital and Dolby Pro Logic II. It produces five-channel stereo via coaxial- and optical-digital inputs.



HOME-THEATER REPLACEMENT

▲ Z-5500 Digital

PRICE: \$400 **CONTACT:** Logitech, www.logitech.com

WHY WE LIKE IT: The Z-5500 Digital is a monster system, with 500 watts of THX-certified power and a room-shaking subwoofer. Its support for DTS, Dolby Digital, and Dolby Pro Logic makes it perfect for home-theater use. And its multiple digital and analog inputs, wireless remote, and impressive sound quality make it a legitimate choice for a main stereo system.



Compact and Portable Speakers

If you want to take your tunes with you—or if you want a system that doesn't clutter your room with cables—a traditional speaker system just won't do. Here are six self-contained speakers that are small enough to fit on a dresser or a counter—or to slip into a suitcase for a long trip. These systems don't provide the same sound quality as comparably priced 2.1 systems, but they make up for this in convenience.



RADIO LOVER ⬆️ iPAL

PRICE: \$130 **CONTACT:** Tivoli Audio, www.tivoliaudio.com

WHY WE LIKE IT: The iPAL's weather-resistant enclosure is perfect for listening to an iPod or laptop at the beach or in the backyard. And in case you get tired of listening to MP3s, the iPAL has one of the best AM/FM radios on the market. Despite its single speaker, we actually preferred the iPAL's full-bodied sound to that of many other portable speakers we auditioned. An optional \$30 carrying case makes it easy to tote your iPAL along with an iPod, earbuds, and cables.

BATTERY LIFE: up to 20 hours on an internal rechargeable battery
WEIGHT: 2 pounds

BUDGET BUY

TravelSound 200 >>

PRICE: \$50 **CONTACT:** Creative Technology, www.creative.com
WHY WE LIKE IT: It's tough to find good inexpensive portable speakers, so the TravelSound 200 impressed us. You won't get a lot of bass or volume, but you will get good stereo sound in a compact—if somewhat chunky—package. The system connects to any iPod or laptop.
BATTERY LIFE: up to 25 hours on four AA batteries **WEIGHT:** 10 ounces



COMPACT COMPANIONS

<< inMotion iM3 and inMotion iMmini ■

PRICE: iMmini, \$130; iM3, \$180
CONTACT: Altec Lansing, www.alteclansing.com
WHY WE LIKE IT: The iM3 and iMmini both provide good sound in a package that folds up to about the size

of a paperback book. The iMmini's dock base accommodates only the iPod mini, while the iM3 can hold most dockable iPods. (The company should have an adapter for the iPod photo by the time you read this.) You can connect nondocking iPods or other audio sources to either model using a standard audio minijack cable. Both models will charge a docked iPod when connected to AC power and can sync a docked iPod with your Mac via Apple's dock cable. The iM3 also includes a nifty remote that lets you control playback from across the room.

BATTERY LIFE: up to 20 hours on four AA batteries
WEIGHT: iMmini, 15 ounces; iM3, 1 pound, 2 ounces



STYLISH SETTING

<< On Stage

PRICE: \$200 **CONTACT:** JBL, find.macworld.com/0224

WHY WE LIKE IT: The On Stage places four speakers in a cool, doughnut-shaped design. You won't get a lot of bass, but the sound is otherwise impressive—especially the treble detail. The On Stage fits all dockable iPods except the iPod photo and can even serve as a replacement dock. (You can connect older iPods, the iPod photo, and other audio sources via a standard 1/8 audio cable.) We just wish it had a remote.

BATTERY LIFE: AC only **WEIGHT:** 1 pound

SPLURGEWORTHY SoundDock >>

PRICE: \$299 **CONTACT:** Bose, www.bose.com
WHY WE LIKE IT: Bose's SoundDock won't easily fit into your suitcase, but it will give you quick access to your music from any room in the house. Thanks to its larger speaker drivers and AC-only power, the SoundDock produces more bass and louder output than more-compact models. (It's compatible only with dockable iPod models.) It also comes with a well-designed wireless remote.
BATTERY LIFE: AC only **WEIGHT:** 4 pounds, 10 ounces





By Jim Heid

Photography
by Peter Belanger

From Tape to CD

Bring Your
Old Recordings
into the
Digital Future

You know those old cassette tapes you have lying around the house—compilations of favorite songs from a bygone era, family get-togethers recorded with a battery-powered portable, and audio letters swapped with a faraway friend? They aren't getting any younger. In fact, they're deteriorating as you read this. Over time, a tape's magnetic particles lose their charge, muffling the audio. If you've stored tapes improperly—in a car's glove box or in a hot attic, say—the particles may flake off entirely, peppering your audio with momentary silences.

It's time to get those magnetic memories into your Mac. Once you've digitized your old tapes, you can enhance the audio and remove noise, and then burn your efforts to CDs or transfer them to your iPod.

STEP 1

Set Up Your Equipment

To transfer audio from aging cassette tapes to your Mac, you'll need some basic audio hardware and recording software. Here's what I recommend:

Cassette Deck The first thing you'll need is a cassette deck that can play back your tapes. Any deck with audio-out jacks should work. However, if you have a large tape library and you don't want to commandeer the deck in your stereo indefinitely, consider purchasing a separate player that you can dedicate to the task. You can buy a good stereo cassette deck online for under \$100. If you originally recorded your tapes on high-quality gear, you should use a midrange or high-end deck that can do justice to your recordings. But keep in mind that even the best equipment won't significantly improve audio captured with a cheap battery-powered tape recorder.

Audio-Input Hardware Next, you need a way to connect the cassette deck to your Mac.

Most currently shipping Macs include a stereo audio-input minijack (marked with a hollow circle and two arrows pointing inward) that's perfect for the task. To connect the two, you'll need a minijack-to-RCA cable (see "Get Connected"). Simply plug the two RCA phono plugs into the line-out jacks on your cassette deck, and plug the 1/8-inch stereo miniplug into your Mac's audio input port.

If you have an older Mac that lacks an audio input, you'll need to buy one of the many third-party audio adapters that connect to the Mac's USB or FireWire ports. For people on a tight budget, Griffin Technology's \$40 iMic (www.griffintechnology.com) is an inexpensive option that plugs into any USB-equipped Mac. However, you'll get much better results with a full-featured audio interface such as Griffin's \$100 PowerWave (★★★★; *Mac Gems*, June 2003) or M-Audio's \$180 MobilePre (www.m-audio.com).

Audio Software There's no shortage of programs that can record and manipulate audio on the Mac. (For some of my favorites, see "Audio Software Options.")

Should You Convert?

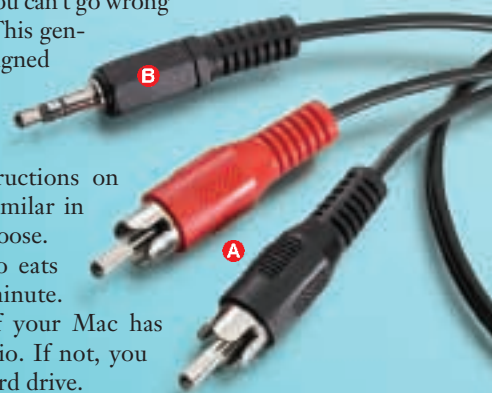
Converting old cassettes into digital files is a great way to preserve precious memories and rare musical recordings. However, not all tapes deserve the time and effort it will take to digitize them. If you own an old cassette of an album that's available on CD, you're probably better off just buying the CD or downloading it from iTunes. It will likely sound superior to anything you could create yourself.

If you're planning to transfer old bootlegs to CD, you may want to make sure someone else hasn't already done the work for you—from better-quality and lower-generation sources, no less. Before you press the record button, search <http://db.etree.org> to see whether your show already exists out there. You may save yourself quite a bit of time and effort—and other bootleggers will thank you for not adding inferior recordings to the trading pool.—JONATHAN SEFF

But for versatility and affordability, you can't go wrong with HairerSoft's \$30 Amadeus II. This general-purpose audio editor is well designed and loaded with features for editing out unwanted audio, creating fades, improving sound quality, and more.

Although I've based these instructions on Amadeus II, the steps should be similar in whatever recording software you choose.

Storage CD-quality stereo audio eats up about 10MB of space per minute. Before you begin, check to see if your Mac has enough room to hold all your audio. If not, you may need to invest in an external hard drive.



Get Connected To set up your recording studio, connect the two RCA plugs A into your tape deck's line-out jacks. Then connect the 1/8-inch miniplug B into your Mac's audio input port, or—if your Mac doesn't have one—into the minijack port on a Griffin PowerWave or another audio interface.

STEP 2

Prepare Your Tapes

While importing audio from old cassettes, you'll inevitably hear some tape hiss—a result of the tape's narrow track and slow playback speed. And a dirty deck or improperly handled tape can compound the problem. To get the best playback from your tapes and deck, take the time to do some basic housekeeping before you begin recording.

Clean the Heads Use cotton swabs and tape-head cleaner to clean your deck's playback head, as well as

AUDIO SOFTWARE OPTIONS

| COMPANY | MOUSE PRODUCT | RATING | PRICE | RECORDS CONTACT | AUDIO | PROS | CONS |
|-------------------|----------------------------|--------|--------------------|---|-------|---|--|
| Apple Computer | GarageBand 1.1 | ★★★★ | \$49 ^B | www.apple.com | yes | Nondestructive filters and effects operate in real time, making experimentation easy. | Offers fewer editing features than a dedicated audio editor. |
| BIAS | SoundSoap 1.1 ^A | ★★★★ | \$99 | www.bias-inc.com | no | Great at cleaning up scratches, pops, and other noise. | Relatively expensive; no recording features. |
| Felt Tip Software | Sound Studio | ★★★★ | \$50 ^C | www.felttip.com | yes | Straightforward interface. | Limited playback controls hamper precise editing. |
| HairerSoft | Amadeus II | ★★★★ | \$30 | www.hairersoft.com | yes | Versatile program for recording, editing, and optimizing audio; inexpensive. | Noise-reduction features are less effective than those in SoundSoap or CD Spin Doctor. |
| open source | Audacity 1.2 | ★★★★ | Free | http://audacity.sourceforge.net | yes | Free; large array of effects and optimizing filters. | Clumsy interface. |
| Roxio | CD Spin Doctor 2 | ★★★★ | \$100 ^D | www.roxio.com | yes | Great at cleaning up noise and optimizing audio. | No audio-editing features. |

^AVersion 2.0 was announced as we went to press. ^BIncluded as part of the iLife '04 suite. ^CBundled with current iBooks. ^DIncluded with Toast 6 Titanium and Toast with Jam 6.

What about My LPs?

If you've been collecting music for a long time, you probably also have crates full of records collecting dust—and possibly warping—in the attic. Unlike tapes, many records have never been released on CD, so you can't just go out and replace them with digital copies. But you can bring your record collection into the digital age just as you can with cassettes—as long as you keep a few caveats in mind.

The Right Connections In many cases, you can't just connect a record player to your Mac and begin recording LPs. That's because most LPs use an RIAA curve—a mathematical formula that lowers the audio's bass levels and raises its treble to maximize recording space and counteract the noise made by the stylus touching the grooves.

To hear your music as it was intended, you need something that can reverse the RIAA curve during playback—either a record player's built-in amplifier or, if it doesn't have one, an external piece of hardware called a preamp. If your record player doesn't offer a built-in amplifier, you can typically purchase a basic preamp—which can then output the audio signal to your Mac—for under \$100. Another option

is to purchase Griffin Technology's iMic or PowerWave audio interfaces. These USB-based interfaces include Final Vinyl, recording software that can reverse the RIAA curve without requiring additional amplification hardware.

Removing Noise Another difference in the process of digitizing cassettes and records is the type of repairs they may need. The most common issue with cassettes is analog tape hiss. But with records, the stylus's physical tracing of the grooves often results in clicks and pops, which appear as tall, thin spikes on a waveform. These problems require an entirely different solution. Luckily, there are filters that can take care of clicks and pop as well. CD Spin Doctor, for example, is particularly good at tackling these audio flaws. It includes both De-Crackle and De-Hiss filters, specifically designed for transferring records. —JONATHAN SEFF



its capstan and pinch roller (the spinning pin and rubber roller that work together to grip the tape and move it across the heads). You can buy head-cleaning fluid at almost any electronics store. For a primer on cleaning your tape deck, see www.homerecording.com/caring.html.

Acclimate Your Tapes If you have stored the tapes in a hot or cold place, let them sit for a few hours to acclimate to the temperature in your recording room. This will eliminate moisture condensation and other problems that could cause tape jams. Then promise to treat your tapes better in the future.

Break the Tabs If you haven't already done so, break off the plastic tabs on the backs of the cassettes you plan to convert. This will prevent you from accidentally recording over your audio.

Desperate Measures When you play that old tape that used to live in your Firebird's glove compartment, you may hear an unpleasant mechanical squealing sound. This is the result of *binder ooze*, and it's likely the dying gasp of your cassette. Over time, the glue that holds the magnetic particles to the tape can migrate to the surface. The tape becomes just sticky enough to adhere to the tape deck's heads, emitting a squeal.

It's probably best to throw away a squealing tape. But if it contains priceless audio, try baking the tape for about 10 minutes at 125 to 150 degrees—preferably in a convection or electric oven. (A gas oven produces too much moisture.) This helps dry out the excess binder.

When the tape has completely cooled, replay it. If it's squeal free, digitize it immediately. Some experts say you can bake a tape a couple of times, but the heat takes a toll on the tape and the cassette mechanism. Consider the oven a last resort.

STEP 3

Fine-tune Your Settings

No two cassette recordings are exactly alike, so to get the best results, you'll want to adjust your tape deck and software settings to match the specific characteristics of each tape you convert.

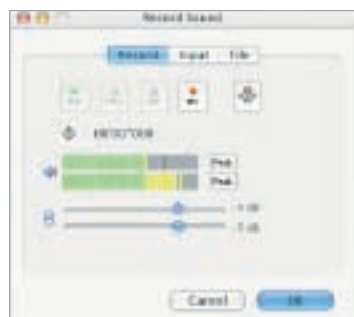
Adjust Your Deck Tapes come in several formulations—metal oxide, chromium dioxide, and so on. Newer cassette decks sense which type of tape you're using and adjust playback appropriately. But many older decks don't, and if you own one of these, you'll need to set its front-panel switches to correspond to the type of tape you're restoring. If the tape isn't labeled, play back a portion of the audio with each setting and use the one that sounds best.

Before you record, you should also experiment with your deck's Dolby noise-reduction setting. Dolby noise reduction can soften the noticeable hiss in a problematic tape. However, it also tends to mute high frequencies, making your audio less vibrant. To see which setting you like best, play a portion of the tape while switching Dolby off and on.

Set Software Levels Next, set your audio software's volume controls to accommodate the loudness of your tape. Proper volume is vital to getting good sound. Set the levels too low, and your audio will be too soft and prone to noise. Set them too high, and loud portions of the recording will sound horribly distorted.

To set the volume control, forward your tape to a particularly loud section. Fire up Amadeus II and begin playing your tape. As you listen, adjust the on-screen sliders in the Navigator window until you find the best balance between soft and loud tones (see "Finding the Sweet Spot").

Check Recording Settings Like all the programs I tested, Amadeus II is preset to record audio at standard CD quality: 44.1kHz sampling rate, 16 bits of resolution, and two tracks. You probably won't need to change these settings. However, if you're restoring a monophonic tape, you can halve the amount of disk space required by having Amadeus II record in mono. Go to Sound: Characteristics, and then choose Mono from the Number Of Channels pop-up menu.



Finding the Sweet Spot

Adjust your software's levels so that the audio is loud without being distorted. The loudest portions of your tape should illuminate the yellow segments of the meters, but never the red ones.



GO TO WEB:

For more conversion tricks, check out our step-by-step guide for transferring movies on VHS tapes to DVD: find.macworld.com/0092.

STEP 4

Record Your Tape

Once you've set your levels, rewind the tape. Click on your software's record button, and then press play on the cassette deck. Don't worry if you end up recording some silence at the beginning of the tape—you can always remove this later.

To make the recording process easier, record an entire side of a tape in one pass. If the tape contains discrete sections—for example, individual songs or acts of a school play—you can use Amadeus II to divide your recording into separate files once you're done.

When you've finished recording, save the file. Place the word *original* in the file name to identify it as your source material. Next, use the Save As command to create a copy of the recording, replacing the word *original* with *edited*. You'll perform your audio alterations on this copy. That way, you'll always have the original, unprocessed version to fall back on if something goes wrong—or if better restoration software appears in the future.

To ensure that nothing happens to your source files, you should burn them onto a CD and store it in a cool, dark place.

STEP 5

Refine Your Recordings

Once you've captured the audio, you can take advantage of your software's editing tools to greatly enhance the quality of your recording. Here are several common polishing chores:

Delete the Dreck If your tape of a concert begins with a few minutes of audience murmuring, delete it.

Like most audio editors, Amadeus II displays your recording as a waveform—a visual representation of sound. (For an overview of the Amadeus II interface, see “Editing Audio in Amadeus II.”) To delete part of the recording, simply drag your mouse across that section of the waveform and then press the delete key.

Divvy It Up If you've recorded a mix of songs, you might want to split your single recording into separate files. That way, you can make each song or section a separate track on an audio CD or on your iPod. This approach also gives you the freedom to optimize each section individually.

If silence separates the songs in your recording, Amadeus II can do the dividing for you. From the Selection menu, choose Generate Marks. In the resulting dialog box, activate the Search For Silences option, and then click on OK. The program will locate silent portions and create a marker at each one. If it misplaces a marker, click on that marker and choose Delete from the Mark dialog box. When you're satisfied, go to Selection: Split According To Marks, and then tell Amadeus II where to store the files. (I recommend creating a folder to hold all the files.)

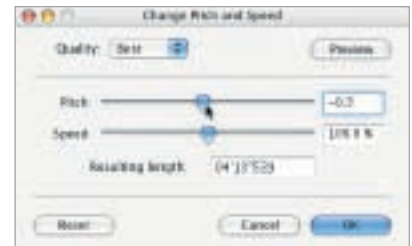
If your recording doesn't contain silent passages, you can create the markers by hand: position the

insertion point where you want a marker, and then press the M key. (You can also create markers on-the-fly by pressing M during playback.) Once you've positioned all the markers, use the Split According To Marks command to divvy up the file.

Create Fades If you've always kicked yourself for missing the first several seconds of that live concert, here's your chance to minimize the evidence—you can transform that jarring start into a gradual fade-in. Highlight several seconds of audio at the beginning of the file, and then choose Effects: Fading: Fade In. You can also fade out the audio by selecting the end of a song and choosing Effects: Fading: Fade Out.

Change the Pitch Perhaps you made a recording with a portable deck whose batteries were dying. As a result, the audio now sounds sped up—as if the announcer had just inhaled helium. Amadeus II makes it easy to fix such problems. The program lets you adjust pitch and playback speed independently. Just choose Effects: Change Pitch And Speed, and then lower the Pitch slider (see “Perfect Pitch”).

Remove Hiss Tape hiss is a common problem with cassette recordings, and Amadeus II can help. Choose Effects: Denoising: Suppress White Noise. Click on



Perfect Pitch Does your audio sound like you recorded the Chipmunks? Try adjusting Amadeus's Pitch and Speed sliders.

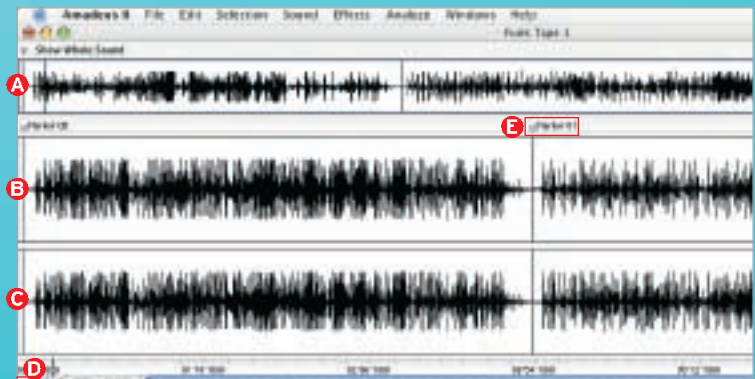
Editing Audio in Amadeus II

You may not be able to turn back the hands of time, but with Amadeus II's diverse collection of editing tools, you can at least recapture some of your audio's youthful vigor.

In the main editing window, Amadeus II displays three waveforms for your audio. The top waveform **A** serves as a navigation guide and displays the entire recording. The center and bottom waveforms represent the left **B** and right **C** channels of a stereo recording.

To find the precise spot you want to edit, you may need to zoom in on the waveform. You can do this with the Zoom tool **D** in the lower left corner of the document window, or by pressing 1-G to zoom in and 1-shift-G to zoom out. Another way to hone in on a waveform is to *scrub* the recording—slowly playing the audio backward and forward until you find the exact spot you desire. In Amadeus II, you can press the right and left arrows on your keyboard to play half-second chunks of audio. Pressing the down arrow during playback will slow the audio.

To divide a long recording into several smaller pieces, simply place a marker **E** between each segment and then go to Selection: Split According To Marks.



Magnetic Makeovers

If you've put Amadeus II through its paces and your audio still sounds dull, you may need some more help. CD Spin Doctor, SoundSoap, and GarageBand all offer powerful audio filters that can pump new life into your old recordings.

One thing to keep in mind, though: don't overdo it. If you apply too much sonic sweetening, you'll end up with an artificial, overprocessed sound. When you're performing fine audio adjustments, it's a good idea to save multiple versions of the recording so you can compare results and choose the version that sounds best.

CD Spin Doctor To reduce unwanted noise and sweeten your sound, open the Filter drawer in CD Spin Doctor. Here you'll find sliders for removing clicks and hiss from your audio. The Exciter control boosts audio's high frequencies, while Sub-Bass boosts low frequencies. The Wideness setting simulates a broader left-right stereo field.

SoundSoap This software does an excellent job of scrubbing away the scratchiness from an old recording. Just click on Learn Noise, and SoundSoap detects and filters out the noise patterns in the recording. You can also use the program to reduce the hum and low-frequency rumble that can plague any recording.

GarageBand You can perform many audio-editing and -optimizing tasks using GarageBand. It applies filters nondestructively, which means it never changes the original audio file. This gives you the freedom to experiment without fear of messing up. Just double-click on the audio's track header, click on the Details triangle, and start playing around.

Try the Equalizer option for adjusting bass and treble, the Compressor for adding sonic punch, and the Gate for removing noise and hiss from quiet portions of the recording. And for a concert-hall effect, try adding some reverb.

the Preview button, and drag the slider to the right until the hiss begins to disappear. Be careful not to overdo it; too much hiss removal will muffle the audio.

Amadeus II has additional noise-reduction options that you can apply to problems such as hum and scratchy records; however, I find these tools cumbersome. If you need these kinds of repairs, I recommend using SoundSoap, from BIAS, or CD Spin Doctor, from Roxio (see "Magnetic Makeovers").

STEP 6

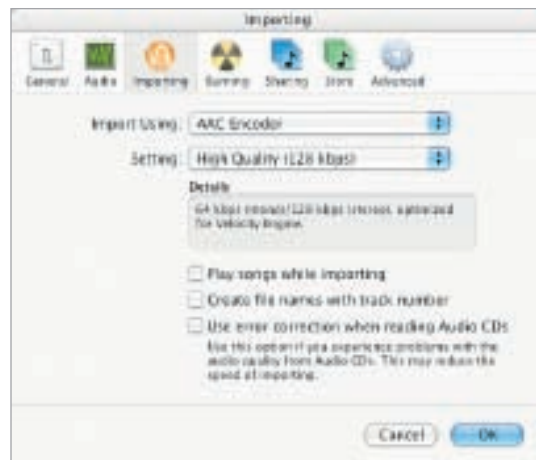
Import Audio into iTunes

Once you've refined your recordings, add them to your iTunes music library so you can burn them to CDs, copy them to your iPod, or use them with the other iLife programs.

All the programs I've mentioned create uncompressed AIFF (Audio Interchange File Format) files. Although these files accurately preserve all the audio data, they're also relatively large, making them impractical for everyday use. To save disk space, you should create compressed versions of your final recordings in MP3, AAC, or Apple Lossless format before importing them into iTunes.

The AAC format is the most efficient of the three, but MP3 has the advantage of universal compatibility. Apple Lossless retains your audio's pristine quality but creates the largest files (for more details, see "iTunes Encoding Strategies," *Digital Hub*, September 2004.)

To convert the recordings, open your iTunes Importing preferences and choose the format you want to use. When you're done, hold down the option key and choose Convert To from the Advanced menu. In



Importing Options Before importing your files into iTunes, specify what format it should use to compress the audio. iTunes will create a new, smaller file while leaving the original untouched.

the dialog box that appears, double-click on the files you want to import. iTunes will create a compressed version of each file and import it into the library.

After you've imported your recordings, use the Song Info command (1-I) to enter details about the songs—song titles, performers, and so on.

If you'd like to create audio CDs from your restored audio, you should use the uncompressed AIFF versions. That way, you won't sacrifice any sound quality to audio compression.

STEP 7

Archive Your Work

When you're finished, you'll end up with multiple copies of each recording: the original version that you imported, the version that you edited, and any compressed versions that you created in iTunes.

To free up some disk space, burn the original, unoptimized versions to audio or data CDs and delete them from your Mac. If you'll mainly be working with the compressed versions in iTunes, you should also consider archiving the uncompressed, edited versions—you may decide you want to encode them in a different format later.

To preserve your old tapes, rewind them and store them on their short edges (upright, as you would shelve a book). Keep them away from heat, excessive humidity, and, most important, magnetic fields.

The Last Word

Just like old photos, movies, and videos, audio recordings bring back people and places from the past. They're worth preserving—and the sooner you turn them into bits and bytes, the sooner you'll halt their inevitable decay. □

Contributing Editor JIM HEID grew up in his dad's recording studio and is gradually restoring hundreds of old reel-to-reel and cassette tapes. He's the author of *The Macintosh iLife '04* (Peachpit Press/Avondale Media, 2004) and its companion Web site, www.macilife.com.